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ABSTRACT

This training manual provides 42 lessons developed for a workplace literacy program at O'Neal Steel. Each lesson consists of a summary sheet with activities and corresponding materials and time; handout(s); pretest; instructor materials and samples; and worksheet(s). Activities in each lesson are set induction, guided practice, applied practice, and closure. The first 41 lessons are categorized into 5 groups. The 15 general lessons are as follows: introductory lesson--O'Neal Company history; fraction; fraction and decimal review; conversion I and II; measurement--standard and metric tape measure, caliper, and micrometer; safety--general, Material Safety Data Sheet, and lockout/tagout; O'Neal computer--WIZ mail (electronic message system); O'Neal Company--checking stock; O'Neal completing orders; and International Organization for Standardization (ISO) 9000 and O'Neal Quality Policy. Five lessons are in the shear section: safety; job procedure; work orders; computer numerical control--basic set-up; and problem solving. The section on loaders consists of 12 lessons: safety; codes and abbreviations; measurement of structural shapes, bar shapes, tubing and pipe, coil and plate and sheet, aluminum tread plate and hot rolled floor plate and sheet, and grip strut and X-metal; loading papers; problem solving--case studies, truckloads, and error reduction. Four lessons on burners are cutting cards, customer drawings, problem solving, and following directions. Five lessons on material handlers include computation--whole numbers; job procedures; shipping and receiving; work orders; and problem solving. A review lesson is provided. (YLB)

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O'Neal Training Manual

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Instructor Notes	Activities	Materials	Time
	Set Induction Tell learners that each of them will introduce themselves and tell two words that describe them using the first letter of their name. Give them time to think and then start with yourself. (Ex. My name is Louise and I am a lively lady.)		10 - 15 minutes
	Guided Practice Explain the purpose of the program, the course content and give a brief history of the company. Give the pre-test.	Course content, Company history Pre-test	10 minutes 20 - 30 minutes
	Applied Practice Have learners answer questions about the company. Have learners complete the word search.	Workbook	20 minutes
	Closure Allow learners to ask any questions they might have or to express any concerns they might have about the training.		

O'NEAL STEEL HISTORY

From a small shed in Birmingham's West End and a labor force of five to become one of the nation's largest steel service centers is the story of O'Neal Steel.

The company's beginnings were meager. Kirkman O'Neal came from the Mobile shipyards to the steel center of Birmingham in 1922 to establish his own business.

With $2,000 of borrowed money, he invested in a small plant so new that there was not a single order on its books. When a nearby mine placed an order for a rotary coil dump and a ventilation system, another $2,000 was borrowed to buy the steel and the company was in business.

Although encountering many problems that confront a small company with insufficient capital, it gradually expanded its operations and acquired a reputation of dependability and good performance. The largest order of the twenties came from American Cast Iron Pipe Company for a monocast building, requiring 1,500 tons of steel including columns measuring five feet across the base, and weighing 12 tons each.

Hard hit by the depression of 1929, strenuous methods were taken to meet the emergency - employees were permitted to live in company houses rent free - jobs were bid at a minimum and the proceeds for labor divided among the men. By the early 1930's, business improved. More orders were received and the plant was enlarged.

In 1935, a service center was opened - one of the first in the South. The beginning was so limited that the entire sales force consisted of one man. Little additional inventory was added because it operated primarily from stocks maintained by the Fabricating Division.

In 1942, having outgrown its facilities in the Western section of town, a modern plant was constructed on a 16 acre site in East Birmingham. War having been declared, the company was awarded contracts to build five different types of bombs, gun platforms and deck houses for destroyer escorts. Working 1300 men around the clock, O'Neal became the nation's largest producer of general purpose bombs which were used extensively in the Pacific area. An outstanding production record was achieved and the company was awarded the Army and Navy E with two citations for excellence of performance.

The 1950's were the beginning of a period of expansion. Service centers, with the most modern processing equipment, were opened in Jackson in 1952, Chattanooga in 1955, Atlanta in 1958, Jacksonville in 1961, Tampa in 1967 and Knoxville in 1968.

In 1969, O'Neal discontinued operations at its fabrication division and enlarged on its service center capabilities in Birmingham.

In 1973, the Mobile service center was opened and in 1974 we moved into our new and modern corporate offices in Birmingham.

In 1975, O'Neal acquired two additional locations: Lafayette and Little Rock.

By the end of 1976, steps had been taken to ensure O'Neal customers the utmost in availability of products produced from hot rolled coil. This expansion program in Birmingham, which included a heavy gauge cut-to-length line, heavy gauge slitter and edger, was begun in the Spring of '76 and was targeted for completion by the end of that year.

The Savannah service center was acquired in early 1979. In 1981 a Memphis service center was acquired, becoming the fourteenth location.

In 1985, O'Neal acquired Shelby Steel, Inc. A five-location service center network. The locations are in Evansville, Ft. Wayne and Shelbyville, Indiana; Louisville, Kentucky; and Nashville, Tennessee.

O'Neal acquired Wabash Lagrange Steel Company in early 1988. This added one more district located in Toledo, Ohio.

Also in December of that year, O'Neal acquired Liberty Steel with three districts in Texas. They are in Dallas, Houston and Lubbock.

In 1989, O'Neal built a facility in Greensboro, North Carolina, and in 1992 opened a facility in Pittsburgh, Pennsylvania, our twenty-third. The 90's have seen an aggressive expansion of the processing capabilities offered by O'Neal, such as the addition of a 96" wide cut-to-length line and a laser burning machine, as well as continued technological advances in the service and quality we provide.

In 1995, O'Neal purchased Weissman Steel in Waterloo, Iowa, giving us 24 locations in 13 states.

Such has been our material growth and progress. Even more though, we value our dedicated and loyal employees, and the good name we have for integrity and service.

History Questions

1. O'Neal Steel acquired two locations in 1975. Name those two locations. **Lafayette and Little Rock**

2. O'Neal Steel was established in **1922** by **Kirkman O'Neal.**

3. In 1935 a service center was opened. How many salesmen did it employ? **1**

4. The 1950's was a time of expansion. How many service centers opened in the 50's? **3** Where are those service centers? **Jackson, Chattanooga and Atlanta**

5. This location was opened in 1992. **Pittsburgh, Pennsylvania**

6. How much money did Kirkman O'Neal borrow to get started in business? **$4,000 - $2,000 to buy the plant and $2,000 to buy steel**

7. Employees were permitted to live in company houses rent free, jobs were bid at a minimum and proceeds for labor was divided among the men. What year did this occur? **1929**

8. The history states that there are 24 locations. Name the 24th location. **Waterloo, Iowa**

Location Word Search

```
R O A G I R O L F G E O R G I A N I L O R A C H T R O N F
V A N N H M D F L O R I D A S R O K K E P H O C A T O O G
A L P A T O E D O S A L A O H I O C A P A I H O U S T O N
N A E S E N A M T L E N T L E D O R G T E N T U K Y C B A
S B N H S R E E P I T T S B L B R O K E N T U C K Y H I S
T E N N E S S E E H E L G A B I R M I N G H A M E M P R H
M I S S I S S I P P I I M U Y N A J U A F J A C S K I M V
T S Y T H A N N A V A S L K V I L A F A Y E T T E L O D A
A X L A I S I G A S A F U R I B M C N A S H V I L L E A N
O M V M E P R R A S M O B I L E I K N O X V I L L E R L O
A S A N V O K N G E H R B U L N C S E L L I V S I U O L R
A V N A E A L H G M O T O L E D O O V E R O G T A M P A T
V E I G N P P I E A R W X G R E E N S B O R O S T R B S E
T E A S B A U R T E X A S O I A E V A N S V I L L E I L P
V L A F A Y E L T T L Y U G O P I I T S B T R G A X R A G
V S I N D I A N A N L N O X V I L L O U I S I A N A N N E
E M P H I N O R W A T E R L O O E L O P F A Y E T E M T O
N N A L T A L A B A M A R T E S E E S E S B V A A G R A N
N O X I L L C H A T T A N O O G A T N R U A L O U I S I N
V N S E V E N N A N O R B H C A R O L I N A S E X A R E T
O U S E S T O N O K S V I L E K E P I T T S B U R G H R U
```

ALABAMA
ARKANSAS
ATLANTA
BIRMINGHAM
CHATTANOOGA
DALLAS
EVANSVILLE
FLORIDA
FORT WAYNE
GEORGIA
GREENSBORO
HOUSTON
INDIANA
JACKSON
JACKSONVILLE
KENTUCKY
KNOXVILLE
LAFAYETTE
LITTLE ROCK
LOUISIANA
LOUISVILLE
LUBBOCK
MEMPHIS
MISSISSIPPI
MOBILE
NASHVILLE
NORTH CAROLINA
OHIO
PENNSYLVANIA
PITTSBURGH
SAVANNAH
SHELBYVILLE
TAMPA
TENNESSEE
TEXAS
TOLEDO
WATERLOO

Instructor Notes	Activities	Materials	Time
	Set Induction		
	Role Playing: Have one learner be the teacher and one learner be the student. Have them read over the cards you give them and role play the situation. Discuss the situation as a whole group.	Role playing script on cards.	5 minutes
	Guided Practice		
	Explain that a fraction is part of a whole thing or a whole group. Show examples on the board or overhead. Point out that the parts are of equal size. Show fractions such as 7/8, 3/4, 8/2, 4/8, 1/2. Ask if they notice anything about the examples. Discuss the relationship of 4/8 and 1/2.	Markerboard Kit or Overhead projector and manipulatives	15 - 20 minutes
	Introduce math vocabulary	Workbook	
	Applied practice		
	Give each learner a sheet of paper. Have them fold it in half and open it back up. Show how each side is 1/2 of the paper. Have them fold it back in half and fold it in half again. Ask how many parts the paper will be divided into (fourths). Have them unfold and look at the paper to see that 1/2 of the paper is also 2/4 of the paper. Continue the process until learners have folded the paper into at least 32nds. Always go back and compare each fold to the relationship of fractions and how they can be reduced. Have learners complete the exercise in the workbook.	Paper Workbook	15 - 20 minutes
	Closure		
	Discuss lesson to determine if additional help is necessary.		2 minutes

Role Playing Script

Teacher: Today we are going to learn about fractions and how you use them.

Student: I don't need to learn about fractions. I don't ever use them. Today's class will just be a waste of my time.

Teacher: Do you watch sports on TV? Do you tell time? Do you use money in any way?

Student: Well, yes I do all of those things. What is your point?

Teacher: My point is, they all involve fractions in some way. In sports you have quarters and halves. When you are telling time, you are dealing with quarter hours and half hours. When you deal with money 1/4 of a dollar is a quarter and 1/2 of a dollar is 50 cents.

Student: Gee, I never thought of it that way. I guess I do need to learn more about fractions.

Pictures of fraction pies or squares would be pasted with the appropriate fraction.

1/2

5/8

4/4 or 1

7/16

2/4 or 1/2

8/2 or 4

3/4

7/8

4/8 or 1/2

VOCABULARY WORDS AND SYMBOLS

Inches (in.) - A standard unit of measure smaller than a foot.

Foot or Feet (ft.) - A standard unit of measure smaller than a yard, consisting of 12 inches.

Centimeter (cm) - A metric unit of measure smaller than a meter, consisting of 10 millimeters.

Millimeter (mm) - A metric unit of measure that is 1/10 of a centimeter.

Standard Measurement System - A system of measurement that deals in units of measurement such as; inches, feet, yards, acres, miles, etc. Also known as the U.S. Standard Measurement System.

Metric Measurement System - A system of measurement that deals in units of measurement such as; millimeters, centimeters, meters, kilometers, etc.

+ (plus sign) - Means to add or combine.

- (minus sign) - Means to subtract or take away.

x (times sign) - Means to multiply.

÷ (division sign) - Means to divide.

Fraction - Shows a part to whole relationship.

Decimal - A fraction with a power of ten shown by a decimal point.

Tape measure - Measuring device used especially for taking long measurements.

Caliper - An instrument used for verifying measurements of thickness or diameter.

VOCABULARY WORDS AND SYMBOLS

Micrometer - A precision instrument used for measuring very small distances. The range of the most commonly available micrometer is 1 inch.

Convert - To change.

Centi - Prefix meaning Hundred.

Milli - Prefix meaning Thousand.

Dividend - The number to be divided.

Divisor - The number by which the dividend is divided.

Numerator - Parts of the whole that are counted.

Denominator - The number of parts there are in the whole.

Reduce the following fractions to the lowest possible terms. Show your work.

Remember: To reduce a fraction to the lowest term, you have to divide the numerator and the denominator by the same number. Use the largest number possible to reduce it to the lowest terms.

Example: $\frac{20 \div 4}{32 \div 4} = \frac{5}{8}$

We know that the fraction 5/8 is in the lowest terms because the only number that you can divide the numerator and the denominator by now is 1.

1. 8/16 = **1/2**
2. 12/32 = **3/8**
3. 10/8 = **1 2/8 = 1 1/4**
4. 5 8/32 = **5 1/4**
5. 4/8 = **1/2**
6. 24/64 = **3/8**
7. 20/32 = **5/8**
8. 12/16 = **3/4**
9. 32/64 = **1/2**
10. 14/16 = **7/8**

Instructor Notes	Activities	Materials	Time
	Set Induction Game - "I have. Who has?" Give one card to each learner. Choose a learner to read his/her card. The learner who has the card that answers "Who has...?" will respond and so on until you get back to the original reader.	Game cards	5 - 10 minutes
	Guided Practice Write problems on the marker board one at a time and ask learners to help you decide the steps needed to solve the problems.	Marker Board kit Addition, subtraction, multiplication and division problems	15 minutes
	Applied practice Have learners complete the practice pages in their workbook.	Workbook	30 minutes
	Closure Check the answers with the group		5 minutes

Instructor Problems

Model the steps taken to solve the following. Use more examples, if necessary, to develop understanding.

1. 7/8 + 7/16 = **1 5/16**

2. 20 3/32 + 7/8 = **20 31/32**

3. 5 7/8 - 1 1/4 = **4 5/8**

4. 25 9/16 - 21 1/8 = **4 7/16**

5. 5 x 7/8 = **4 3/8**

6. 13 x 3/4 = **9 3/4**

7. 13 ÷ 3/4 = **17 1/3**

8. 120 ÷8/32 = **480**

9. 21.580 + .085 = **21.665**

10. 6.536 + 2.380 = **8.916**

11. 65.430 - .075 = **65.355**

12. .875 - .02 = **.855**

13. 2.4 x 3 = **7.2**

14. 1.5 x 8 = **12.0**

15. 120.6 ÷ 3 = **40.2**

15.25 ÷ 1.5 = **10.166**

Adding and Subtracting Fractions

1. To add or subtract fractions with unlike denominators you must first find a common denominator.

   Ex.: $\begin{array}{r} 5/8 = /16 \\ \underline{+\ 3/16 = 3/16} \end{array}$

   The common denominator is 16 because both 8 and 16 will go into 16 an equal number of times.

2. Next divide to find out how many 8's are in 16.
   5/8 = /16 (divide) 16 ÷ 8 = 2

3. Next multiply 2 x 5 and the result is 10.
   5/8 = /16 (result 2) x 5, the numerator of the fraction we are changing.

   5/8 = 10/16

Multiplying and Dividing Fractions

To multiply fractions use the following:

$$\frac{\text{numerator x numerator}}{\text{denominator x denominator}}$$

Ex.: $16 \times 3/4 =$

change 16 to a fraction by placing it over 1.

$$\frac{\overset{4}{\cancel{16}}}{1} \times \frac{3}{\underset{1}{\cancel{4}}} = \frac{12}{1} \qquad \text{or } 12$$

Use cancellation if possible. Reduce to lowest possible terms.

To divide fractions use the following:

Invert the divisor (the number you are dividing by) and then multiply the

$$\frac{\text{numerator x numerator}}{\text{denominator x denominator}}$$

Use cancellation if possible.

Ex.: $4 \div 3/8 =$

$$\frac{4}{1} \times \frac{8}{3} = \frac{32}{3} = 10\ 2/3$$

Canceling - a shortcut used when multiplying the fractions, to reduce before you solve the problem.

Solve the following problems. Show your work. Reduce to lowest terms.

Addition of Fractions

1. 3/8 + 1 1/2 + 7/8 + 7/16 = **3 3/16**

2. 7/64 + 9/16 + 3/8 = **1 3/64**

3. 7/8 + 13/16 = **1 11/16**

4. 7/64 + 20 7/8 + 5/32 = **21 9/64**

5. 6 3/8 + 3/32 + 7/16 = **6 29/32**

Subtraction of Fractions

1. 20 3/8 - 7/32 = **20 5/32**

2. 4 1/4 - 2 1/16 = **2 3/16**

3. 5 1/2 - 9/16 = **4 15/16**

4. 14 5/8 - 2 1/2 = **12 1/8**

5. 6 - 2 3/8 = **3 5/8**

Solve the following problems. Show your work. Reduce to lowest terms.

Multiplication of Fractions

1. 7/8 x 6 = **5 1/4**

2. 1/2 x 12 = **6**

3. 2/4 x 15 = **7 1/2**

4. 9/16 x 4 = **2 1/4**

5. 34 x 1/2 = **17**

Division of Fractions

1. 12 ÷ 3/4 = **16**

2. 5 1/4 ÷ 1 1/2 = **3 1/2**

3. 24 ÷ 3/8 = **64**

4. 4 1/2 ÷ 1/2 = **9**

5. 8 ÷ 5/8 = **12 4/5**

Addition and Subtraction of Decimals

To add or subtract decimal numbers line up the decimals and add or subtract.

Ex.: 4.165 + 3.48 = should be written this way.

$$\begin{array}{r} 4.165 \\ \underline{+\ 3.48} \end{array} \qquad \text{add}$$

Ex.: 4.165 - .225= should be written this way.

$$\begin{array}{r} 4.165 \\ \underline{-\ \ \ .225} \end{array} \qquad \text{subtract}$$

Multiplication and Division of Decimals

Multiplication

Ex.:

$$\begin{array}{r} .236 \\ \underline{\times\ \ .72} \\ 472 \\ \underline{1652} \\ .16992 \end{array}$$

Multiply as though the decimals do not exist and then count the digits to the right of the decimal in both numbers. There are 5 digits to the right of the decimal in the two numbers. Count 5 digits over from the right to your left in the answer and place your decimal there.

Division

To divide two decimal numbers move the decimal in the divisor (the number you are dividing by) to make it a whole number. Move the decimal in the dividend (the number you are dividing) the same number of places. Add zero's as place holders if necessary. Bring the decimal straight up in your answer.

Ex.:

$$2.5.\overline{)10.0.}\ \overset{.}{.}$$

Word Problems

The part you are burning should be 173.7 cm long with a tolerance of .55. What is the largest measurement the part can have and still be within tolerance? **174.25 cm** What is the smallest measurement the part can have and still be within tolerance? **173.15 cm**

You need 3 parts 14 3/4" wide by 14 3/4" long. The kerf is 1/4 inch. How wide does the plate need to be? (Remember to include the kerf at the border.) **48"**

Solve the following problems. Show your work.

Addition of Decimals

1. 4.625 + .75 = **5.375**

2. 3.5025 + .875 + .75 + 3.8137 = **8.9412**

3. 104.13 + 26.38 + 2.04 + 3.343 = **135.893**

4. .385 + 1.40 + 23.46 + 81.05 + 72 = **178.295**

5. 1.75 + 3.625 = **5.375**

Subtraction of Decimals

1. 8.2 - 1.6 = **6.6**

2. .92 - .56 = **.36**

3. 5.368 - .56 = **4.808**

4. .024 - .010 = **.014**

5. 5.025 - .019 = **5.006**

Solve the following problems. Show your work.

Multiplication of Decimals

1. 2.5 x 6 = **15.0**
2. 12.5 x 44 = **550**
3. 1.5 x 7 = **10.5**
4. 1.5 x 8 = **12.0**
5. .75 x 25 = **18.75**

Division of Decimals

1. 20 ÷ 1.5 = **13.3**
2. 490 ÷ .10 = **49**
3. 35.3 ÷ 5 = **7.06**
4. 240 ÷ .5 = **480**
5. 5.25 ÷ 1.5 = **3.5**

Solve the following problems. Show your work.

Hint: Include the spacing for the borders.

1. Joe needs to cut three parts with outside measurements of 6 3/4" x 8 3/8". The parts must be spaced 1 7/8" apart for burning. What is the smallest the plate can be to burn these parts?

   27 3/4 in. x **12 1/8** in.

2. George has an order for twenty round parts which have a diameter of 12 1/2" with a 1" spacing. These parts are to be burned from 1 1/2" A-36 with four parts across the width of the plate. What size does the plate need to be to minimize waste?

   Length **68 1/2** in. Width **55** in.

3. The A-36 plate is 1 3/8" thick, 48" wide and 8' long. How many 4" x 4" squares can be burned from this plate, if the spacing is 1/2"?

   210

Solve the following problems. Show your work. Reduce to the lowest terms.

1. 18 1/4" + 18 1/4" + 18 1/4 + 18 1/4" = **73"**

2. 96" - 75 3/4" = **20 1/4"**

3. 25 1/4" x 4 = **101"**

4. How many 50 1/2" pieces can you shear from 288" material? **5**

5. You have an order for 50 pieces of X-metal 48 inches wide and 55 1/2 inches long. You are to shear this order from X-metal 48" x 12'. How many sheets of X-metal will you need? **25**

6. You have an order for 15 pieces of floor plate 48" x 48". How many plates will you use if the order is sheared from 48" x 24' floor plate? **3**
What is the dimension of the drop? **48" x 12'**
How many plates will you use if the order is sheared from 96" x 24' floor plate? **2**
What are the dimensions of the drops? **48" x 48" and 96" x 16' or 48" x 12' and 48" x 24'**

7. 33 3/4" + 33 3/4 = **67 1/2**

8. How many 20 1/4" pieces can you shear from 96" material? **4**

9. 20 1/4" x 2 = **40 1/2"**

10. 120" - 90 3/4" = **29 1/4"**

11. You have an order for 2,000 pieces. Your supervisor asked that you shear at least 3/4 of the order during your shift. How many pieces will you need to shear? **1,500**

12. Your order is for 16" wide by 3' 8 7/8" long pieces. The order says to use 48" x 120" material. How many pieces 16" by 3' 8 7/8" can you shear from three pieces of this material? The material should be sheared to minimize waste. **21**

Instructor Notes	Activities	Materials	Time
	Set Induction Give learners a card when they come in. Have them find the person who has the matching card. (e.g. the card with 3/4 matches the card with .75.) The person who matches is their partner for the day.	Cards	2 - 3 minutes
	Guided Practice Show how to convert fractions to decimals to millimeters and vice versa. Have learners work with you.	Marker board kit Workbook	20 minutes
	Applied Practice Have learners complete the exercise in their workbook. Have them discuss answers with their partner.	Workbook	30 minutes
	Closure Discuss how this lesson will help them on the job.		

Guided Practice Problems

	Fraction	Decimal	Millimeters
1.	5/32		

To change a fraction to a decimal number you divide the bottom number into the top number. Write the problem like this: $32\overline{)5}$

32 won't go into 5, so we have to add a decimal point after the 5 and then add zeros as necessary to complete the problem. Bring the decimal straight up to your answer.

```
      .15625
  32)5.00000
     32
     180
     160
      200
      192
        80
        64
        160
        160
          0
```

The decimal equivalent of 5/32 is .15625.

To change .15625 to millimeters multiply .15625 times 25.4.

$$\begin{array}{r} .15625 \\ \underline{\times\ 25.4} \\ 62500 \\ 78125 \\ \underline{31250} \\ 3.968750 \end{array}$$

round the number to 4 digits after the decimal

Hint: To get your decimal in the correct place count the digits to the right of the decimal in both the numbers you used to multiply.

5/32 converted to millimeters is 3.9688

Fraction	**Decimal**	**Millimeters**
2.		**3.1750**

When you know the millimeters, convert the millimeters to a decimal number first. Divide the millimeters by 25.4. Make 25.4 a whole number by moving the decimal over to the right one place. Then move the decimal in 3.1750 the same number of places to the right. 3.1750 becomes 31.750. Now you can divide.

$$\begin{array}{r} .125 \\ 25.4\overline{)3.1750} \\ \underline{254} \\ 635 \\ \underline{508} \\ 1270 \\ \underline{1270} \\ 0 \end{array}$$

.125 is your decimal equivalent for 3.1750 millimeters.

To change .125 to a fraction is simple when you remember this trick.

Write .125

Add zero's under each number $\frac{.125}{000}$

Add a 1 under the decimal $\frac{.125}{1000}$

Remove the decimal and reduce.

$$\frac{125 \div 5}{1000 \div 5} = \frac{25 \div 5}{200 \div 5} = \frac{5 \div 5}{40 \div 5} = \frac{1}{8}$$

3.1750 millimeters is equal to 1/8.

	Fraction	**Decimal**	**Millimeters**
3.		**.5000**	
4.	**15/16**		
5.			**.3969**

Solve these problems. Show your work.

	Fraction	**Decimal**	**Millimeters**
1.	1/2	**.5000**	**12.7000**
2.	**3/4**	.7500	**19.05000**
3.	**11/16**	**.6875**	17.4625
4.	17/64	**.265625**	**6.74688**
5.	**13/32**	**.40625**	10.3188
6.	**51/64**	.796875	**20.24063**
7.	9/16	**.5625**	**14.28750**
8.	**1/2**	**.5000**	12.70
9.	**1/32**	.03125	**.79375**
10.	7/8	**.875**	**22.22500**

Instructors Notes	Activities	Materials	Time
	Set Induction Have different measuring devices on a table. Ask: Does it matter what measuring device is used to measure a piece of paper, a wall, steel plate, etc.? Discuss the different measuring devices and their uses.	Tape measures (standard and metric), caliper, micrometer	10 minutes
	Guided Practice Explain how measurements can be converted. Write measurements on the board and convert as a group. Have learners read the conversion tips. See if anyone has a question about conversions.	Marker board kit Conversion table, Metric conversion tips Workbook	15 - 20 minutes
	Applied Practice Have learners complete the exercise in their workbook. Check with each learner to determine if they need help.	Workbook	30 minutes
	Closure Go over the worksheet to check for discrepancies.		

Metric Conversion Tips

1. To convert inches to millimeters multiply the number of inches times 25.4.

   Ex. 9” (inches)
   x 25.4
   228.6 millimeters

2. To convert millimeters to inches multiply the number of millimeters times .03937.

   Ex. 228.6 millimeters
   x .03937
   8.999982 or
   about 9” (inches)

3. To convert centimeters to millimeters multiply the number of centimeters times 10.

   Ex. 9.5 centimeters
   x 10
   95 millimeters

Conversion Table

To Convert from	To	Multiply by
Millimeters	Centimeters	0.10000
Millimeters	Meters	0.00100
Millimeters	Inches	0.03937
Millimeters	Feet	0.00328
Millimeters	Yards	0.00109
Centimeters	Millimeters	10.00000
Centimeters	Meters	0.01000
Centimeters	Inches	0.39370
Centimeters	Feet	0.03281
Centimeters	Yards	0.01094
Meters	Millimeters	1,000.00000
Meters	Centimeters	100.00000
Meters	Inches	39.37000
Meters	Feet	3.28084
Meters	Yards	1.09361
Inches	Millimeters	25.40000
Inches	Centimeters	2.54000
Inches	Meters	0.02540
Inches	Feet	0.08333
Inches	Yards	36.00000
Feet	Millimeters	304.80000
Feet	Centimeter	30.48000
Feet	Meters	0.30480
Feet	Inches	12.00000
Feet	Yards	0.33333
Yards	Millimeters	914.40000
Yards	Centimeters	91.44000
Yards	Meters	0.91440
Yards	Inches	36.00000
Yards	Feet	3.00000

Measure the following in inches and convert to millimeters. Show your work. Note: Measurement of objects might not come out to an exact increment. Please measure as close as possible.

1. Measure the length.

__5 1/8”__ in. __130.2__ millimeters

2. Measure the thickness.

__1 3/4”__ in. __44.5__ millimeters

3. Measure the width of the table.

_________ in. _________ millimeters

4. Measure the height of the table.

_________ in. _________ millimeters

5. Measure the length of the table.

_________ in. _________ millimeters

Solve these problems. Show your work.

Note: Take your answers to 5 decimal places.

1. Tom has a part with a tolerance of 1/8 inch. What is that in millimeters?

   3.17500

2. What is the fraction equivalent for the decimal .28125?

   9/32

3. If a part is 25.40000mm thick. What is the equivalent in inches.

   1

4. 3/8 is equal to: **.375** decimal
   9.52500 millimeters

5. The tolerance on the order Larry has is 1/4 inch. What is that in decimal form? **.25** What is that same measurement in millimeters? **6.35000**

Solve these problems. Show your work. Take your answer to 5 places after the decimal.

1. A part is 135 millimeters long. What is that in inches?

   5.31495 inches

2. If the part is 135 millimeters long, approximately how many can be burned from a drop that is 2 feet long if we do not allow for the kerf?

   4

3. The drop you just measured with your metric tape measure is 63 centimeters long. What is that in millimeters and inches?

   630 millimeters **24.80310** inches

4. The following measurements were taken in inches. Convert each to millimeters.

   12 inches **304.80** millimeters
   39 inches **990.60** millimeters
   8 inches **203.20** millimeters

5. The following measurements were taken in centimeters. Convert each to millimeters.

   93 centimeters **930** millimeters
   24 centimeters **240** millimeters

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners estimate the length of their foot. The height of the door. The width of the table where they are sitting. Have learners measure these things. Ask: Were your estimates correct? Was your foot 12 inches long? Why do we need exact measurements at O'Neal Steel?	Standard tape measure	15 minutes
	Guided Practice Show overhead and explain the increments on the standard and metric tape measure. Have learners help you determine the readings.	Standard and metric tape measure	20 minutes
	Applied Practice Have learners complete the exercises in their workbook.	Learner Workbook	20 minutes
	Closure What did you learn in this lesson?		5 minutes

Estimate:

1. The length of your foot.

   ___________ft. __________in.

2. The height of the door.

   ___________ft. __________in.

3. The width of the table where you are sitting.

   ___________ft. __________in.

Measure:

1. The length of your foot.

   ___________ft. __________in.

2. The height of the door.

   ___________ft. __________in.

3. The width of the table where you are sitting.

   ___________ft. __________in.

A picture of a tape measure would be pasted here.

Standard Tape Measure

The tape measure shows increments of 8ths and 16ths. Fill in the markings for 32nds up to the 1 inch mark. The more increments on the tape measure, the more accurate the measurement can be. A tape measure with increments every 64th inch apart would allow us to take a more accurate reading than a tape measure with increments every 8th inch apart.

A picture of a tape measure would be pasted here with arrows pointing to the appropriate measurement.

Look at the standard tape measure. Each one shows three readings. Record those readings.

1. 2. 3.

1. **6** ft **8 1/2** in

2. **6** ft **11** in

3. **7** ft **1/2** in

4. 5. 6.

4. **10** ft **7 1/2** in

5. **10** ft **9** in

6. **11** ft **0** in

7. 8. 9.

7. **0** ft **7 11/16**in

8. **0** ft **11 3/16**in

9. **1** ft **3/16**in

10. 11. 12.

10. **3** ft **7 5/16**in

11. **3** ft **8 5/16**in

12. **3** ft **9 13/16**in

11. 12. 13.

11. **17** ft **11 1/4** in

12. **18** ft **2** in

13. **18** ft **5 1/2** in

14. 15. 16.

14. **15** ft **0** in

15. **15** ft **1 7/16** in

16. **15** ft **4 3/4** in

17. 18. 19.

17. **7** ft **10 3/4** in

18. **8** ft **3/8** in

19. **8** ft **2 5/8** in

20. 21. 22.

20. **1** ft **11** in

21. **2** ft **1 3/16** in

22. **2** ft **5 1/2** in

Look at the metric tape measure. Each one shows three readings. Record those readings.

1. 2. 3.

1. __215.1__ cm 2. __221.4__ cm 3. __225.2__ cm

4. 5. 6.

4. __16.2__ cm 5. __20__ cm 6. __27.6__ cm

7. 8. 9.

7. __91.2__ cm 8. __100__ cm 9. __102.6__ cm

10. 11. 12.

10. __112.2__ cm 11. __114.7__ cm 12. __118.5__ cm

Instructor Notes	Activities	Material	Time
	Set Induction Divide learners into groups. Give each group 4 parts to measure. Have the groups measure the parts and compare their measurements to the measurements on the card provided.	4 parts for each group	5 minutes
	Guided Practice Show Caliper and discuss how a caliper is used to measure.	Caliper	15 minutes
	Applied Practice Have groups of learners measure the 10 parts in their box. Each learner should measure and record every part. Measurements should be to the nearest 32nd of an inch. When all learners in the group are finished have them compare measurements and discuss any differences.	Boxes with 10 parts each. Calipers (Have learners bring their standard issue caliper.)	30 minutes
	Closure Discuss the importance of correct measurement on the job.		10 minutes

A picture of a standard issue caliper would be pasted here.

Slide Caliper

A slide caliper is an instrument of measure that should only be used to verify product dimensions. It is not a precision measuring device. A caliper has a set of jaws added to the rule, one jaw being fixed at the end and the other being moveable along the scale. The slide caliper can be used to take inside or outside measurements. If you are taking the inside measurement of an object, you will take your reading from the line marked “in” on you caliper. Different points of the jaws are in contact with the material when measuring inside dimensions and outside dimensions. If you are taking the outside measurement of an object, you will take your reading from the line marked “out” on your caliper.

Look at the caliper above.

1. What is the reading if we were taking an outside measurement?

9/16 in.

2. What is the reading if we were taking an inside measurement?

3/4 in.

Record your measurements on this page.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Instructor Notes	Activities	Materials	Time
	Set Induction Divide groups into teams. Give each group a set of cards. Half the cards have a measurement and half the cards have an instrument of measure showing a reading. Each team is to match the measurement to the instrument showing that measure.	Set of Cards	10 minutes
	Guided Practice Show video: How to use a micrometer. Discuss what you learned from the video.	Video: How to use a micrometer	15 minutes
	Practice Exercise Model steps taken to read and interpret a micrometer. Give reading and have learners set their micrometer on that reading. (Check)	Starrett - Tools and Rules for Precision Measuring p. 18	10 minutes
	Applied Practice Have learners complete the practice exercises in their workbook. Review Vocabulary	Workbook	25 minutes
	Closure Discuss the use of a micrometer by the machine operators.		

How To Read A Micrometer

The sleeve is divided into 40 equal parts represented by vertical lines. Each line is 1/40 or .025 of an inch. Notice every fourth line is longer. The longer numbered lines represent hundreds of thousandths. Ex.: The line marked "3" represents .300. Now look at the beveled edge of the thimble.

The beveled edge of the thimble is divided into 25 equal parts of .001 of an inch. A complete revolution is 1/40 of an inch or .025.

The micrometer must be calibrated in order to get accurate readings. A calibrated micrometer has the zero line on the thimble meeting exactly on the zero line of the sleeve.

Note: Standard issue micrometer will only measure up to 1".

Easy Steps To Reading A Micrometer

Everyone understands money, so let's think of it as making change for a ten dollar bill.

1. Count the visible numbers on the sleeve as dollars.
2. Count the vertical lines after the last visible number as quarters.
3. Count the divisions on the thimble as cents.
4. Add up the amounts and place a decimal point where you would put the dollar sign.

A picture of a micrometer would be pasted here.

Label the parts of a micrometer.
(Courtesy of L. S. Starrett Company)

Anvil **Spindle** **Sleeve** **Thimble** **Ratchet Stop**

Frame

Zero Reference

List the steps taken to read a micrometer.

Identify the highest number shown on the sleeve. __________

Read the number of graduations appearing after the highest number.

Read the number on the thimble. ______________________

Add the 3 numbers to determine the reading. ____________

____

Pictures of micrometers would be pasted here with the appropriate measurement.

Complete this exercise as modeled by instructor.

1. **0** + **.075** + **.007** = **.082**

2. **.200** + **.025** + **.010** = **.235**

3. **.300** + **.025** + **0** = **.325**

4. **.100** + **.075** + **0** = **.175**

5. **0** + **.050** + **.017** = **.067**

6. **.600** + **.025** + **0** = **.625**

7. **0** + **0** + **.022** = **.022**

8. **.100** + **0** + **.003** = **.103**

9. **.100** + **.075** + **.012** = **.187**

10. **.400** + **.050** + **.018** = **.468**

11. **.200** + **.050** + **0** = **.250**

12. **.700** + **0** + **.018** = **.718**

13. **.100** + **.025** + **0** = **.125**

14. **0** + **.025** + **.008** = **.033**

15. **.300** + **.075** + **0** = **.375**

16. **.300** + **0** + **.012** = **.312**

17. **.200** + **.075** + **.017** = **.292**

18. **.600** + **.025** + **0** = **.625**

19. **.500** + **0** + **0** = **.500**

20. **.400** + **.025** + **.010** = **.435**

Instructor Notes	Activities	Materials	Time
	Set Induction Read the nonsense rules and discuss the problems that would occur as a result of the nonsense rules. Explain that rules are written for the protection of people. That is why a new employee is given the safety manual as part of their orientation.	Workbook	5 - 10 minutes
	Guided Practice Have learners follow along with you as you take a look at the contents page of the Safety Manual. Have learners help you locate information about: 1. Housekeeping - locate number 11 and have someone read it.; 2. Attitudes - locate number 4 and have someone read it.; 3. Processing equipment - Under number 4 locate item (C) and have someone read it. Discuss Safety Regulations and why it is important for all employees to follow them.	Safety Manual - Housekeeping p. 16, Attitudes p. 2, and Processing Equipment p. 26 - 27.	15 - 20 minutes
	Applied Practice Have learners work in groups of three to state their own safety rules for their department. They should have their final selection of rules written out to be read to the whole group when each small group has completed the task. Remind learners that safety manuals are given to an employee when they are hired, so their rules should be easy to understand. Introduce safety vocabulary	Workbook	10 - 15 minutes
	Closure Have a member from each group read their safety rules. Discuss the rules after each group reads. Ask learners if they agree with the rules of the group. You may want to use thumbs-up, thumbs-down after each group and discuss reasons they agree or disagree after all groups.		15 - 20 minutes

Nonsence Rules

1. Come to work only when you want to work.
2. Wear what you want to wear
3. Eat lunch any time you want to eat.
4. Take a break every hour.
5. Go home when you get tired of working.
6. If you don't want to wear shoes, you don't have to wear shoes.

Safety - Word Search

B I L O S G C D P R O T E C T I V E Y I T A R O U I S H O
N A C S H O H R D O U Z D A N G E R O U S R D A C N I N T
G L O S O R E A T T I T U D E X P T I V E P D A N G E R O
R O R I E G C Z C H M K E J I N R A T A A H O P R E P A R
E C R T S E H A Z A R D O U S E L L N A T Y N E L S D I C
D K O F L A S H P O I N T S A F E T E S H S O B E T N S G
I O S I F O E H D F O G N C F T N E D I C C A O Q I R I T
E U I R A U F T F I S H T J E R P E J D L M N T I O H O Y
N T V H R S L L T H R I N K T O X I K E M O K L P N S E T
T Y E P I P A A C C V D E N Y T L U C A V E I N O C R A E
R I N E D O L E O I G X N G G O G G L E S T A B I L I T Y
S O F B P A M H T L T A G O U T L F U T K I E S O P K E F
A T H E H S M Y E T A H D R A H R E L C N L B R R A D T L
F O R N Y O A T J R T V A C R O B A T T A M H P C I A H A
E D I E S U B H R W A O U T D A C K I E R Y L S A F S H M
E A C T I V E L B I T S U B M O C U G N A T A E U Y U B M
T N G E C D L N E L O R N T H S D N L O E X P R T E S S A
Y O U S A F E T Y O X I E C L H L I O E N D A E I L Y R B
S R J E L R R Y L E I E A N N A P I R Z G K F S O R O D L
H A S I D T T Y B E C R S T F A A K Y S O A R G N S N I E
O H A Z A R D O U S I N G R E D I E N T S C P A I R K T B
E Y A R T P S L I O N A S A S O B R A P T Y B V A S O R S
S K I N A B S O R P T I O N O S C I N G A R E A C T I V E

ACCIDENTS
ATTITUDE
CAUTION
CORROSIVE
DANGEROUS
FLAMMABLE
FLASH POINT
GOGGLES
HARD HAT
HAZARDOUS
HAZARDOUS INGREDIENTS
HEALTH HAZARD
INGESTION
INHALATION
LOCKOUT
OSHA
PHYSICAL DATA
PROTECTIVE
REACTIVE
REACTIVITY
SAFETY
SAFETY SHOES
SKIN ABSORPTION
STABILITY
TAGOUT
TRAINED
TOXIC

Safety Vocabulary

Attitude - Feelings or thoughts toward something or someone.

Occupational Safety and Health Administration (OSHA) - Agency that provides rules governing the workplace to insure the safety of the employee.

Hazardous - Dangerous.

Identity - The name, manufacturer and Chemical Abstract Services (CAS) number.

Lockout - Totally blocking the flow of energy from the power source to the equipment.

Flammable - Will burn easily.

Safety - Being free from danger.

Trained - Instructed in the use of equipment, machinery, etc.

Safety Guard - Devices placed on machinery for your protection.

Protective - Intended to guard from injury or danger.

Goggles - Protection for the eyes.

Caution - Warning.

Dangerous - Unsafe.

Hazardous Ingredients - Dangerous components.

Physical Data - Things such as the boiling point, melting point, solubility, appearance and odor.

Health Hazard - Health problem that could occur.

Reactivity - The ability to undergo a reaction, releasing heat or energy.

Accidents - An unintended thing that happens.

Inhalation - Breathing in of substances.

Ingestion - Eating or swallowing something.

Skin Absorption - Passing through the skin into the bloodstream.

Corrosive - Able to cause something to wear away.

Toxic - Poisonous to the body.

Reactive - Materials that can react in various ways when mixed with other materials or under certain conditions.

Combustible - A liquid or other substance that burns when heated above 100° Fahrenheit.

Flash Point - Temperature at which flammable materials give off enough vapor to burn.

Stability - The tendency to resist change.

Hard Hat - Hat worn to protect the head from injury.

Safety Shoes - Special shoes worn to protect the foot from harm.

Procedure - method of doing something.

Authorization - Approval or permission.

Maintenance - Keeping in a state of good repair.

Unauthorized - Not having approval or permission.

Bypass - To ignore.

Protection - A guard from injury or danger.

Tagout - Placing a tag on the power source to warn others not to start the equipment.

Record your safety rules below.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners divide into 2 teams and play a modified version of the game Pictionary®. Explain that the purpose of the game is to quickly guess the word being drawn by the opposing team. No numbers, words or gestures may be used. The team with the most points wins the game. Each team gets to draw from the following categories: Safety equipment (5), line equipment (10), measurement tools (15) and communications (25). Have the person drawing give you a numbered list of what they are drawing. Use one item from each category. The opposing team has 2 minutes to guess what the person is drawing. The drawing should start simple, with details added as you go. When the game is finished ask the learner if their initial thoughts were correct or if they needed more details to guess correctly. Explain how important details can be when you are talking about safety.	Markerboard kit, post-it note pad	20 minutes
	Guided Practice Ask learners if they know what a Material Safety Data Sheet (MSDS) is. Show how to locate information on a MSDS. (I) Product identification, (II) Hazardous ingredients, (III) Physical data, (IV) Fire and explosion data, (V) Health hazards, (VI) Reactivity, (VII) Spill and leakage procedures, (VIII) Safe handling and use. Explain that there is not a standard format for MSDS, but they should all contain the basic information.	Transparency, Overhead projector	10 minutes

Instructor Notes	Activities	Materials	Time
	Applied Practice Have learners complete the practice exercises independently. Circulate around the room to assist learners if necessary.	Workbook	20 minutes
	Closure Discuss how being able to locate information on the MSDS could help them be more safety conscious on the job.		10 minutes

Instructor Notes

1. **Identity** - The name of the chemical, the manufacturer, the chemical abstract services (CAS) number and an emergency phone number to call for assistance in cleaning up spills or for assistance in emergency treatment.

2. **Hazardous ingredients** - The ingredients are listed by name and they have an OSHA personal exposure limit (PEL) and a threshold limit value (TLV) which measure the toxicity of the material or chemical.

3. **Physical data** - The boiling point, melting point, solubility, appearance and odor.

4. **Fire and explosion information** - Flash point - the lowest temperature it will ignite with a flash. Flammable limits - the point at which it will automatically ignite. How to extinguish a fire, including any special fire fighting procedures. Unusual fire and explosion hazards.

5. **Health hazards** - Routes of entry - skin, inhalation and ingestion. Health problems that could occur. Emergency first-aid procedures.

6. **Reactivity** - The stability of the chemical. The incompatibility of this chemical with others you might think of mixing it with. Will the chemical polymerize (Form a giant molecule from smaller molecules of the same kind.) under certain condition? Conditions that should be avoided. Hazardous decomposition or byproducts.

7. **Spill and leakage procedures** - Instructions stating what must be done in case of a spill or leakage. The methods you must use for properly disposing of waste.

8. **Safe handling and use** - The type of respiratory protection, if required. The personal protective equipment necessary for safe use and any special clothing required.

Use the Material Safety Data Sheet (MSDS) for liquid oxygen to complete the following.

1. What measures should be taken to fight a liquid oxygen fire?
Use dry chemical or carbon dioxide, unless the fire is larger. In the case of a larger fire use water spray, fog or regular foam.

2. What is the chemical Abstract Services (CAS) number and the chemical family for liquid oxygen?
CAS number - 7782-44-7
The chemical family is inorganic gas.

3. What protective clothing, if any, is required?
No protective clothing is required for the gas form.

4. Describe the physical characteristics of liquid oxygen?
Liquid oxygen is a light blue, odorless liquid.

5. What would happen if liquid oxygen and Acetylene were accidentally mixed with each other? **A mixture of liquid oxygen and acetylene may explode upon heating or compression. The liquids form a powerful explosive.**

Use the Material Safety Data Sheet (MSDS) for A-36 to complete the following.

1. Name the ingredients in A-36.
   Iron, aluminum, carbon, manganese, phosphorus, silicon and sulfur.

2. What is the primary route of entry?
   Inhalation

3. Describe the first-aid procedures for treatment for particles in the eye.
   Flush the eyes with large amounts of water to remove particles. Seek medical attention.

4. What does the carcinogen information tell us?
   No ingredients are listed on the National Toxicology Program (NTP) Annual Report, in the International Agency for Research on Cancer (IARC) monographs or by OSHA as being carcinogenic.

5. Locate the "Note" under Health Hazard Data. Read it and then write the information in your own words.
   Accept reasonable answers.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners complete the crossword puzzle. Allow them to work together.	Workbook	10 - 15 minutes
	Guided Practice Guide learners in developing a list of when lockout/tagout should be used. Ask the following questions: 1) Why is lockout/tagout necessary?; 2) What should be used to lockout the power source?; 3) Who should remove the lock?; 4) What procedure should be followed to lockout/tagout a machine?	Instructor Reference: "Play it safe... Lockout/Tagout - Your key to safety"	15 - 20 minutes
	Applied Practice Have learners complete the exercise in their workbook.	Workbook	10 - 15 minutes
	Closure Review the Safety lessons. What have you learned and how will this information help you be safe on the job? Vocabulary Review: Check the crossword puzzle.		15 - 20 minutes

1. Why is lockout/tagout necessary? **To prevent accidental injury or death.**

2. What should be used to lockout the power source? **Only your own lock.**

3. Who should remove the lock? Why? **Only the person who places the lock on the machine should remove it. The person who is working on the machine is the only one who knows for sure that he/she is finished and in a safe zone to restore the power to the machine.**

4. What procedures should be followed to lockout/tagout a machine? **1)Turn off the machine and disconnect the power sources.; 2) Place your lock on the power source.; 3) Tag the machine at the place you are working to let others know what you are doing.; 4) Check to be sure all energy sources are locked by turning on the switch. If no energy is released you have safely locked the machine.**

Read the passage and answer the questions.

You discover you have a bad bearing on the north side of the machine. You know the machine should not be operated with a bad bearing so, you get in touch with maintenance in order to get it fixed. They get started on the repair and have to leave for a few minutes. While they are gone the buzzer sounds for the end of the shift. You pick up your lunchbox and go home.

Sam, the operator on the next shift, looks at his orders and proceeds to start the machine. It does not turn on. He finds that the main power source has been turned off. He looks at the machine and from where he is standing everything appears to be fine. Sam turns the power back on, enters the program and starts the machine. There is a terrible noise and the machine comes to a jarring stop. He rushes to turn the power off at the source. A maintenance man is yelling, "What have you done?"

1. What should maintenance have done before starting to work on the machine? **Maintenance should have followed proper lockout/tagout procedures.**

2. What is lockout/tagout and why is it important? **Lockout/tagout is a way of keeping machinery from being started while it is being worked on. It prevents accidental start-ups that could cause injury or death, and damage to expensive machinery.**

3. What are the problems in this situation? **Sam failed to check to see why the machine was turned off at the power source. Maintenance failed to lockout/tagout the power source and the machine.**

4. Who removes a lockout/tagout from the machine? **Only the person who placed the lock or tag on the machine should remove it.**

5. Who was effected by this situation? **The entire company.**

6. If it is impossible to put a lock on the power source, what should you do? **Check with your supervisor to let him/her know that you are working on the machine and place a tagout device on the power source to warn others.**

Instructor Notes	Activities	Materials	Time
	Set Induction Ask learners to take a sheet of paper and number from 1 - 10. Ask them to listen to the "Following Directions" questions carefully and do all calculations mentally, writing only the answers. Read the questions very carefully. After reading the questions, ask everyone how they did?; Did anyone get confused or quit listening?; Has anyone had times when they felt someone has quit listening when they are giving instructions or comments? One way to make certain instructions are received is through WIZ mail. Introduce Vocabulary.	Sheet of paper	10 - 15 minutes
	Guided Practice Guide the learners through the steps taken to send a WIZ mail message and read a WIZ mail message.	Workbook	10 - 15 minutes
	Applied Practice Have learners work in groups of 2 to create a WIZ mail message as it would be created on the screen. Check with each group while they are creating the message. Have learners complete the exercises in their workbook.	Workbook	20 minutes
	Closure Discuss the importance of communications through WIZ mail as a whole group.		10 - 15 minutes

Following Directions Questions

1. Start with 2; double it; add 1; the answer is **5.**

2. Start with 10; subtract 8; add 5; the answer is **7.**

3. Start with 20; add 5; subtract 11; the answer is **14.**

4. Start with 2; multiply 3; add 3; the answer is **9.**

5. Subtract 9 from 21; add 2; subtract 5; the answer is **9.**

6. Add 5 to 17; subtract 15; multiply by 2; the answer is **14.**

7. From a number that is 4 larger than 6; add 2; subtract 3; the answer is **9.**

8. In the series of numbers, 2 - 5 - 1 - 8 - 3 - 10, the first three numbers were **2 - 5 - 1.**

9. In the series of numbers, 1 - 3 - 5 - 10 - 1 - 2, the last three numbers were **10 - 1 - 2.**

10. From a number that is 3 smaller than 11; add 4; subtract 5 ; the answer is **7.**

WIZ Mail Vocabulary

Send a Message (WMSE) - New WIZ messages are created from this screen.

Directory of Bulletins (WMBB) - A list of Notices and/or Announcements for WIZ mail users to view.

Read New Messages (WMRN) - New WIZ messages that have been received are read from this screen.

Read Old Messages (WMRO) - WIZ messages that have already been received are read from this screen.

Read File Messages (WMRF) - WIZ messages that have been sent by the signed on user.

Alphabetic List of Users (WMNA) - An alphabetic list of all WIZ mail users and printers. The USERID, location and telephone number is displayed.

List of Departments (WMDE) - A list of department and districts with each employees name in the appropriate department or district.

Dictionary (WMDD) - An alphabetic list of words.

USERID - The WIZ mail ID given to an employee.

Command Line - WIZ mail commands are typed in at this line.

Send <PF1> - Sends a message to everyone listed in the distribution.

Menu <PF5> - The main menu screen.

Down <PF8> - Moves down through a WIZ message.

UP <PF7> - Moves up through a WIZ Message.

Route <PF3> - Sends responses to old messages back to the original sender or any WIZ mail user.

Delete <PF4> - Deletes a WIZ message.

Signing-on to the WIZ Mail System

Each O'Neal employee is assigned a designated sign-on. This allows each employee to enter the O'Neal production system. In the production system an employee can use the WIZ mail system and use the CICS transactions (Ex. SFC (Shop Floor Completion), SOQ (Sales Order Inquiry), and SSD (Stock Status Detail)). From a blank screen, press clear. This will bring up the O'Neal Steel Menu of Applications. Type an "A" and press the "enter" key to enter into the production part of CICS.

The sign-on screen for CICS will appear. Each employee is assigned a Userid code and the employee can assign the password. Once this information is entered, press the "enter" key. This will bring up the WIZ mail selection screen.

Signing-off of the WIZ Mail System

To sign-off from CICS, press the "clear" key. This will clear any information from the screen. Then press the "B" key and press "enter". This will sign the employee off the system. Signing-off is important. If an employee does not sign-off of a terminal, another employee would be able to read WIZ messages and/or send messages under the signed on employees name.

Sending a WIZ Message

WIZ mail is a very useful communication tool. An employee can let his/her co-worker know important information without having to see them in person. A WIZ message can be sent to any O'Neal employee who has been assigned a designated sign-on code. Sending a message is very simple and takes only a few minutes.

To send a WIZ message to someone, go to Send a Message (WMSE) from the Main Menu or type WMSE from a blank screen.

From the message sending screen, the author (the person sending a message) of the message will type in the subject (title of the message), the distribution (the employee(s), department(s) and/or district(s) who will receive the message) and the message text.

When typing the message, if it is longer then one page, use the PF8 key to move to the next page. (PF7 will move back through the message)

Once the message is complete and is ready to be sent, press PF1 to send the message to the person(s) listed in the DIST area.

If the author wanted to read a message that he/she sent, go to Read File Messages. This allows the author to read all messages he/she has sent the past 7 days (unless already deleted).

Routing or Re-sending WIZ Messages

When a new WIZ message is received, this message can be re-sent to the original author or to another person. This is called routing a message. Routing can be a very useful tool in WIZ mail. (When a message is received that has useful information on it, routing allows a person to share this information with other employees.

To route a new message, press PF3. The DIST will turn from blue to green*. (This will allow a person to change the name of who will receive the message.) Comments can be added to the original message. Once all information is added, press PF1 to send.

If a message is received earlier in the day and you would like to respond later, that message would be retrieved from "Read Old Messages". The steps to route would be the same as above.

If a message was sent to an employee and that person accidentally deleted the message before reading it, then the original author can re-send the message.

To re-send a message, go to "Read File Copies". Select the message to re-send and press PF1. All of the text will turn from blue to green*. If no changes need to be made then press PF1 again to re-send.

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* There are exceptions to this.

Looking up a Department or Employee Name

Department

If someone wanted to send a message to an entire department, but did not know the WIZ name for that department, it can be found under "List of Departments". This gives the WIZ name for all departments and districts. (The cursor is placed under a department name and then "enter" is pressed. You will be shown the names of all employees in that department who will receive the message.)

To send a message to that department or district, go to the "DIST" part of a WIZ message and type an "*", then the department WIZ name.

Employee

To look up someone's WIZ name abbreviation go to "Alphabetic List of Users". This will give the USERID, location and telephone # of all WIZ users.

To look up someone, make certain the cursor is at the command line. Type "F" (space) and the last name of the person. Press "enter" The terminal screen will display about 20 employees whose last names are the same or similar to the one typed in at the command line. The USERID is what is typed in the "DIST" part of a message to send it to the employees.

Match the abbreviation and command to the correct definition.

Abbreviation & Commands	**Definitions**
1. WMSE - **g**	a. Read File Copies
2. WMRN - **d**	b. WIZ mail commands are typed in at this line.
3. WMRO - **j**	c. Sends a message to everyone listed in the distribution.
4. WMRF - **a**	d. Read New Messages
5. USERID - **l**	e. The main menu screen.
6. Command Line - **b**	f. Moves down through a WIZ message.
7. PF1 - **c**	g. Send a Message
8. PF5 - **e**	h. Moves up through a WIZ message.
9. PF8 - **f**	i. Routes responses to old messages back to the original sender or any WIZ mail user.
10. PF7 - **h**	j. Read Old Messages
11. PF3 - **i**	k. Deletes a WIZ message.
12. PF4 - **k**	l. The WIZ mail ID given to an employee.

Pictures of WIZ Mail screens would be pasted here.

Below is a WIZ mail screen. This screen is for sending a new message. Create a new message to an employee or your supervisor. Make certain the message is job specific.

(Fill in all areas needed to send a message.)

The night shift supervisor has informed you that some parts are not measuring correctly and to be very careful when you are checking your order. Create a message to let everyone who will see these parts know that they will need to double check the measuring. Also route the message to your supervisor.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners sit at a terminal. Ask how the keyboard differs from a regular keyboard.		10 minutes
	Guided Practice Explain the keyboard to learners. The only keys that will be used are the letter keys, the number keys and the function keys. Explain that thefunction keys are at the top of the keyboard. Each function key contains the letters PF and a number, one through twenty-four. Go into the SFC screen and follow the steps to complete an order. Discuss any problems.	Workbook	15 - 20 minutes
	Applied Practice Have learners complete the exercises in their workbook.	Workbook	10 - 15 minutes
	Closure Discuss the exercises to determine if extra help is necessary.		5 - 10 minutes

Pictures of the different screens would be included after the explanations.

Stock Status Allocations (SSA Screen)

Type SSA, then type in a valid item number and press **enter**. The Stock Status Allocation screen will be displayed. This transaction is used to view current orders on file for the item and district.

Screen Description

SSA 140330-1-01 - Stock Status Allocation for Item # 140330, type code 1 for district 01.

Description - Describes the material assigned to that item number.

Width - Material width in inches.

Length - Material length in feet and inches.

Order Number - The order number.

Order Date - The date the order was entered into the system.

Res Qty - The number of pieces of stock set aside to fill the order.

Unit - Specifies the quantity in pieces.

Proc - Process Type. The process type code is entered in order entry. P - Processed Item (Sawed, sheared, etc.); O - Odd Shaped (Burned); G - Gross Item (Multiple Sizes); D - Drop.

Stock Status Allocations (SSA Screen)

Stat - Order Status. The order status indicates stages of completion of the order. (See order status codes)

Customer Name - The name of the customer who placed the order.

Enter will move forward through the screen information.

PF1 will go to the SSQ screen (Stock Status Inquiry).

PF2 will go to the SSD screen (Stock Status Detail).

PF7 will move backward through the screen information.

PF8 will move forward through the screen information.

PF11 - After positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Clear will exit that screen.

Stock Status Detail (SSD Screen)

Type SSD, then type in a valid item number and press **enter**. The Stock Status Detail screen will be displayed. This transaction is used to view item information such as weight, description, free-on-hand quantity for the specific item and district.

Screen Description

SSD 140330-1-01 - Stock Status Detail for Item # 140330, type code 1 for district 01.

Description - Describes the material assigned to that item number.

Width - Material width in inches.

Length - Material length in feet and inches.

Mach Code - The machine code representing the piece of equipment to be used for processing this item.

WT/Piece - The weight of one piece of stock material.

WT/FT - The weight of the item per foot of length.

FOH - Free on Hand. This number is determined by subtracting the allocated quantity by the on-hand quantity.

Sales Alloc - This is a reservation of the number of units or pieces needed to fill an order. The reservation is made at the time the order is entered into the system. Sales allocations are for customer orders.

Stock Status Detail (SSD Screen)

Transfer Alloc - Transfer Allocations. This is a reservation of the number of units or pieces needed to fill an order for an inter-company transfer order.

On-Order - The number of pieces ordered.

PF1 will go to the SSQ screen (Stock Status Inquiry).

PF2 will go to the SSA screen (Stock Status Allocation).

PF7 will go to the Stock Location Inquiry and Update Screen.

PF9 will go to the Drop Inventory Inquiry and Reservations screen.

PF11 - After positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Stock Status Inquiry (SSQ Screen)

Type SSQ, then type in a valid item number and press **enter**. The Stock Status Inquiry screen will be displayed. This transaction is used to view a list of all O'Neal districts carrying this particular item.

Screen Description

SSQ 140330-1-01 - Stock Status Inquiry for Item # 140330, type code 1 for district 01.

Description - Describes the material assigned to that item number.

Width - Material width in inches.

Length - Material length in feet and inches.

W/F - The weight of the item per foot of length.

W/P - The weight of one piece of stock material.

Type - Type Code. A single digit number located after the item number to describe the type of material. 0- Direct; 1 - Domestic Stock; 2 - Domestic Consigned; 3 - Foreign Stock; 4 - Foreign Consigned.

Loc - The two letter code for the branch location that stocks a particular item.

P FOH - The number of pieces available for sale in the warehouse.

Stock Status Inquiry (SSQ Screen)

Sls Alloc - Sales Allocation. The number of pieces that sales has setup for future use.

Tr Alloc - Transfer Allocations. The number of pieces that has been setup for use as a transfer.

Ovstk - Over Stock. The number of pieces over the usual stock amount for this item.

On-Order - The number of pieces ordered.

PF1 will go to the SOQ screen (Sales Order Inquiry).

PF2 will go to the SSD screen (Stock Status Detail).

PF6 will go to the SSA screen (Stock Status Allocation).

PF9 will go to the Drop Inventory Inquiry and Reservations screen.

PF11 - After positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Stock Location Inquiry and Update (STK Screen)

PF2 will go to the SSD screen (Stock Status Detail).

PF11 - After positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Stock Location Inquiry and Update (STK Screen)

Type STK, then type in a valid item number and press **enter**. The Stock Location and Update screen will be displayed. This transaction is used to view the location by bay or stacker of the item specified.

Screen Description

STK 1403301-BA - Stock Location for Item # 140330, type code 1 in the BA (Birmingham) district.

Desc - Describes the material assigned to that item number.

Type Loc - The type of storage location in the warehouse (B - Bay; S - Stacker).

B4F422 - The warehouse location of a stock item. If it is located in a bay, the first three characters should be a bay number. (Ex.: B01 - Bay 1) The last three characters should be the rack number in that particular bay. The stacker items will have hyphen (-) between every two characters (Ex.: 01-01-01).

No Drop - If drops are stocked for this material, the location of the drops will appear here. See Drop Retention Policy for what drops are put back into stock.

Whse-Item-Type - The item type classifications are prepull, pull from stock and load and hi-volume. If the material is prepull the space will be blank. If the material is Pull From Stock and Load there will be a "P" in the space. If the material is Hi-volume an "H" will appear in the space.

Read the explanations of the SSA, SSD, SSQ and STK screens and answer the following.

1. The first step for entering the SSA, SSD. SSQ and STK screen is typing the abbreviation for the screen you wish to enter. The next steps are the same. What are the next steps. **The next steps are type in a valid item number and then press enter.**

2. On the SSA and the SSD screen, PF1 will take you to the **Stock Status Inquiry (SSQ) screen.**

3. On the SSQ screen, how many pieces in the warehouse are available for sale? **60**

4. The SSA, SSD and SSQ screens have three things in common. What are those three things? **The SSA, SSD and SSQ screens all contain information on the length, width and description of the material.**

5. What is the description for the item shown on the STK screen. **3/4 #9 Reg X-Metal S/T 60 x 10.**

6. How will the use of these screens make your job easier? **Accept any reasonable answer.**

7. On the stock status allocations (SSA) screen the process type codes are P, O, G, and D. What does each code represent? **P - processed item (sawed, sheared, etc.; O - odd shaped (burned); G - gross item (multiple sizes); D - drop.**

Instructor Notes	Activities	Materials	Time
	Set Induction List the different screens on the board. Have learners tell what they know about each of the screens.	Markerboard Kit	10 - 15 minutes
	Guided Practice Have learners assist you in determining the purpose of each of the screens. Explain how to get to the screens and how to use each. Discuss how the screens will help them on the job.	Workbook	15 - 20 minutes
	Applied Practice Have learners complete the exercises in their workbook.	Workbook	15 minutes
	Closure Discuss the exercises as a whole group	Workbook	5 - 10 minutes

Pictures of the different screens would be included after the explanations.

Shop Floor Item Completion (SFC Screen)

Type SFC, then type in a valid order number and press **enter**. The Shop Floor Item Completion screen will be displayed. This screen is used to make any final changes to an order prior to shipping. Changes may include cut length and width, quantify shipped and number of packages.

Screen Description

SFC WH 32627 001 - Shop Floor Completion screen for order number WH 32627, line item number 001.

Ord Stat - Order Status indicates stages of completion of the order.

Cust - The name of the customer receiving the material.

Salesman - The Sales person who received the order from the customer and entered it into our order filling system.

Whse Stat - Warehouse Status of an order.

Loc Cards - The number of locator cards printed.

Cut cards - The number of cutting cards printed.

Ship To - The customer's name and address receiving the material.

Line Status - The status of the line item in the warehouse.

Item # - The number assigned to the stock size material.

Shop Floor Item Completion (SFC Screen)

Description - The description of the material the customer has ordered. This block can have the part number, cutting information and customer instructions.

SFC Stat - If this space is blank, no change was made to the item. If there is a "P" in the space, a change was made to the line item from the SFC screen.

Load Cpy Cnt - The number of loading copy papers that have been printed for this order.

Cust Part # - The part number assigned by the customer.

Stock Wt - The calculated weight of the inventoried material reserved to fill an order.

Qty Ord - The number of pieces ordered by the customer.

Qty Res - The number of stock pieces reserved to fill an order.

Theor Wt - Theoretical Weight. The billing weight for this item. This weight is derived by one of the following methods: 1) Calculated at order entry based on size and material; 2) Overridden at order entry to allow for scrap loss, etc.; 3) A scale weight was entered at SFC. This will replace the theoretical weight during the inventory relieve function.

Qty Shp - The number of pieces shipped to the customer.

New Res - This is where the quantity reserved can be changed.

Scale Wt - Scale Weight is the weight determined by actually weighing the material on a scale.

Shop Floor Item Completion (SFC Screen)

STK Width - The width of the stock material in inches.

STK Length - The length of the stock material in feet and inches.

Cut Width - The width of the cut material in inches.

Cut Length - The length of the cut material in feet and inches.

Process - Process Code. A machine code that designates the machine on which the item was processed (sheared, burned, sawed, etc.).

Whse Message - Warehouse Message. Internal message for the warehouse and office personnel.

Load/Ship Instr - Messages can be typed in this space to let the warehouse personnel know where the material is located, how many skids, all of stock, no stock and/or if the material has been worked.

No of Pkgs - The number of bundles, skids or packages for this particular order. If a number is not entered the system will automatically enter the number of pieces for the order.

Heat Number - The heat number is assigned by the producing mill. Type the heat number of the material in this space.

Total Feet - This space will reflect the total linear or square feet of the material.

Shop Floor Item Completion (SFC Screen)

PF1 will complete the item.

PF2 will hold or release an order on SFC.

PF3 will complete the order.

PF6 will go to the SFC Order Header Maintenance screen.

PF7 will move backward through the screen information.

PF8 will move forward through the screen information.

PF11 - After positioning the positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

PF12 will cancel a line item,

PF13 will go to the Shop Floor Item Completion Inquiry screen.

PF14 will print the Shop Floor Tag.

PF15 will go to the SOQ screen (Sales Order Inquiry).

PF16 will go to the Special Description screen for update.

PF18 will change the SFC completion status to complete or back to incomplete.

PF20 will go to the DIU screen (Drop Inventory Additions/Shipments).

Sales Order Header Audit Summary (SOAQ Screen)

Type SOAQ, then type in a valid order number and press **enter**. The Sales Order Header Audit Summary screen will be displayed. This transaction provides a summary of changes made to the specific sales order.

Screen Description

SOAQ WH 32627 - Sales Order Header Audit Summary for order number WH 32627.

Date CHNG - Date Change. The date the status of an order is changed.

Time CHNG - Time Change. The time of day the status of an order is changed.

OPID - Operator ID. The person who made the changes to the order.

Ord Stat - Order Status indicates stages of completion of the order.

Bill Stat - Billing Status of an order.

Whse Stat - Warehouse Status of an order.

Sales Order Header Audit Summary (SOAQ Screen)

PF1 will go to the SOQ screen (Sales Order Inquiry).

PF2 will go to the Detail screen of SOAQ. See copy of Detail screen.

PF7 will move backward through the screen information.

PF8 will move forward through the screen information.

PF11 - After positioning the positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Sales Order Inquiry (SOQ Screen)

Type SOQ, then type in a valid order number and press **enter**. The Sales Order Inquiry screen will be displayed. This transaction is used to view sales order information such as customer name, ship-to address, order status, total weight, etc..

Screen Description

Header Screen

SOQ WH 32627 - Sales Order Inquiry for order number WH 32627.

Ord Stat - Order Status indicates stages of completion of the order.

Whse Stat - Warehouse Status of an order.

Line Items - The number of line items for a particular order.

Order Weight - The total weight for a particular order.

Salesman - The Sales person who received the order from the customer and entered it into our order filling system.

Ship To - The customer's name and address receiving the material.

Sales Order Inquiry (SOQ Screen)

PF1 will go to the SOAQ screen (Sales Order Header Audit Summary).

PF3 will go to the Line Item Summary screen. This screen will give a summary of the line item (Line number, Item number, Description, Status, Weight and Customer Name). See copy of Line Item Summary screen.

PF9 will go to the Extra Instructions Screen. This screen will list the special customer instructions. See copy of Extra Instructions screen.

PF11 - After positioning the positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

Enter will go to the Detail Line Item Screen.

Sales Order Inquiry (SOQ Screen)

Screen Description

Detail Line Item Screen

SOQ WH 32627 - Sales Order Inquiry for order number WH 32627.

Cust Name - The name of the customer receiving the material.

Order - The order number.

Line Items - The number of line items for a particular order.

Item # - The number assigned to the stock size material.

Order Qty - Order Quantity. The quantity for the order displayed.

Part No - The part number assigned by the customer.

Description - The description of the material the customer has ordered. This block can have the part number, cutting information and customer instructions.

Whse Message - Warehouse Message. Internal message for the warehouse and office personnel.

Width - The width in inches of the material after processing.

Length - The length in feet and inches of the material after processing.

Res Qty - The number of stock pieces reserved to fill an order. The "C: indicates there was a change to this amount on the SFC (Shop Floor Completion) screen.

Sales Order Inquiry (SOQ Screen)

Theor Weight - The system calculated weight for an item.

STK Location - Stock Location. The location of the stock material by bay and bin/floor location.

Color Code - If the material is identified by a color coding system, that color code will appear here.

Process Code - The processing code indicates the machine processing the material.

PF1 will go to the SSQ screen (Stock Status Inquiry).

PF2 will go to the SOQ Header screen.

PF3 will go to the Line Item Summary screen. This screen will give a summary of the line item (Line number, Item number, Description, Status, Weight and Customer Name). See copy of Line Item Summary screen.

PF7 will move backward through the screen information.

PF8 will move forward through the screen information.

PF11 - After positioning the positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.

PF13 will go to the Shop Floor Item Completion Inquiry screen.

* All information on the SOQ screen is also on all cutting cards.

Read the information about the SOAQ, SOQ, SFC, BOLQ, DIR, DIU, and SFT screens. Answer the following questions.

1. What does "Ord Stat" mean? **Order status indicates stages of completion of the order.**

2. What is the function of the PF11 key? **After positioning the cursor in a particular field, PF11 will show an on-line help screen for that field.**

Define the terms used on the SFC screen.

3. Description - **The description of the material the customer has ordered. This block can have the part number, cutting information and customer instruction.**

4. Qty Shp - **The number of pieces shipped to the customer.**

5. No of Pkgs - **The number of bundles, skids or packages for this particular order. If a number is not entered the system will automatically enter the number of pieces for the order.**

6. Process - **Process Code. A machine code that designates the machine on which the item was processed (sheared, burned, sawed, etc.).**

What is the function of the PF3 key on the SFC screen? **PF3 will complete the order.**

Instructor Notes	Activities	Materials	Time
	Set Induction Divide learners into two groups. Have the learners brainstorm and record information about the changes that have taken place since they started working for the company. After 5 minutes bring learners back together. Write the different changes on the markerboard and discuss each.	Paper Markerboard Kit	10 minutes
	Guided Practice Read Indispensable? And explain to learners how everyone at the company is a team member and that players on a team work together to accomplish goals. Each team member has a specific job that is an important part of the whole operation at the company and that job includes customer satisfaction.	Indispensable?	10 minutes
	Applied Practice Have learners read the ISO 9000 story and answer the questions.	Workbook	15 - 20 minutes
	Closure Discuss the exercises and talk about problems brought out in question number 1. Review vocabulary		15 - 20 minutes

Indispensable?

Sometime, when you're feeling important,
Sometime, when your ego's in bloom,
Sometime, when you take it for granted
You're the best qualified in the room.
Sometime when you feel that your going
Would leave an unfillable hole,
Just follow this simple instruction
And see how it humbles your soul.
Take a bucket and fill it with water,
Put your hand in it up to the wrist,
Pull it out and the hole that's remaining
Is the measure of how you'll be missed.
You may splash all you please when you enter,
You can stir up the water galore,
But stop, and you'll find in a minute
That it looks quite the same as before.
The morale of this quaint example
Is to do just the best that you can,
Be proud of yourself, but remember,
There is no indispensable man (or woman).

-Anonymous

(Source Unknown)

ISO 9000

The International Organization for Standardization (ISO) was founded in 1946 with the American National Standards Institute (ANSI) representing the United States. The purpose of the ISO is to develop and encourage industrial standards worldwide. The ISO has developed standards of quality covering five different areas. The area of interest to the company is the ISO 9002 which is a model for quality assurance in the production and installation of manufacturing systems.

Customers worldwide are demanding more from their suppliers, especially when it comes to quality assurance. They want high quality products and they want consistency of that high quality. ISO certification lets everyone know that you comply with high standards of quality. The fundamentals of ISO 9000 may be summed up as:

1. Say what you do.
2. Do what you say.
3. Be able to prove it.

Every employee O'Neal is responsible for the reputation of the company. The pride you have in doing the job to the best of your ability shows that reputation means something to you. As the company moves forward, changes will take place. The team members at the company will see less direct supervision and more work teams. This means that you will be solving problems and making decisions on your own. ISO 9000 makes it necessary for employees to be able to identify problems, initiate action to correct problems, follow-up to insure that the corrective action is effective, and take the necessary measures to prevent the problem from re-occurring.

The key factors in all this are communications and training. Communications is the way we exchange thoughts and ideas or give and receive information. To communicate well does not mean to agree with everything someone else says, but it does mean you should try to understand the other person's point of view. Remember, no two people in the world are exactly alike. We all have different personalities, thoughts, ideas, values and experiences we can share with each other through open communications on the job and through training sessions.

Training is also one of the points covered by ISO 9000. According to the ISO Standards, the company is responsible for identifying training needs and providing the training for all employees affecting quality. The employees need to be qualified for their job based on education, training and/or experience.

Compliance with ISO 9000 standards will improve the efficiency of the company, increase profit and improve marketing. It will give the company a competitive advantage as customers learn of our certification and job security will increase as the word spreads throughout the marketplace.

Read the Corporate Quality Policy and the Mission Statement and answer the questions.

Corporate Quality Policy

It is our policy to supply products and services conforming to the specifications and expectations of our customers, both internal and external.

This is accomplished by philosophies and actions which:

1. Emphasize quality in everything we do.

2. Commit to the process of company-wide continuous improvement as we strive for defect-free products and services.

3. Provide training to employees at all levels and support the philosophy of employee involvement and contribution.

4. Assure that satisfied customers are the focus of everything we do regarding quality.

5. Assure that quality is a part of all sourcing decisions.

Our Mission

To provide the best possible value to our customers.
To maintain the highest ethical standards with each of our customers, suppliers, employees and communities.
To achieve superior financial performance and long-term growth.

Our Key Strategies

Operational Excellance: We will provide superior value to our customers by consistently achieving extraordinary levels of quality, service and convenience; by minimizing cost at every stage of the distribution channel; and by dramatically improving the speed and reliability of our key business processes.

Customer Commitment: We will listen to our customers and respond to their needs rapidly and effectively. For those customers with exceptionally complex requirements, we will communicate in-depth across company and departmental boundaries, combining our skills with theirs to reduce their total costs and enhance their profitability.

Entreprenurial Action: We will seek opportunities to apply our strengths within our existing markets and beyond. We will take intelligent risks, and be willing to change our course, and always strive to be the best.

1. Give an example of something that has happened on the job that was the result of a failure to communicate. Do not use names of people involved.

2. Why is ISO 9000 certification so important to the company? **ISO helps keep the company competitive by letting customers know we have the highest standards of quality.**

3. The acronym ANSI stands for **American National Standards Institute.**

4. The fundamentals of ISO 9000 can be summed up in three sentences. What are they?
   1. Say what you do.
   2. Do what you say.
   3. Be able to prove it.

5. What does the ability of the company to remain competitive mean to you? **Accept any reasonable answer.**

1. Why is it important to provide superior quality and value to our customers? **Customers will buy from the company that offers the best quality at the most economical price. they do not have to buy from the company.**

2. Why is it necessary to provide training to employees at all levels? **Training is necessary to keep up with advancements in technology and to satisfy the requirements of ISO 9000.**

3. The corporate quality policy states: "It is our policy to supply products and services conforming to the specifications and expectations of our customers, both internal and external." What does it mean when we say "internal customer"? **An internal customer is anyone within the company that uses any material or information that we handle.**

4. What are four actions that can be taken to demonstrate our customer commitment? **(1) Listen to our customers, (2) Respond to their needs, (3) Communicate in-depth to solve complex problems, and (4) Combine our skills with theirs to reduce their costs and enhance their profitability.**

Instructor Notes	Activities	Materials	Time
	Set Induction Pass out cards and have learners role play the rule on their card. Have other learners guess the rule.	Cards	15 - 20 minutes
	Guided Practice Discuss the previous lesson on general safety. Ask if there are other safety rules that apply to the shear. List them on the markerboard. Discuss the importance of knowing how to safely operate the machine.	Markerboard Kit	15 - 20 minutes
	Applied Practice Have learners read the machine safety guidelines and answer the questions. Review safety vocabulary.	Workbook Crossword Puzzle	15 - 20 minutes
	Closure Discuss the answers as a whole group.		10 - 15 minutes

Shear Safety Rules

1. Know how to operate the machine before starting.
2. Be sure all safety guards are in place.
3. Always use a hand tool to help position pieces or to remove small pieces.
4. Use a brush or something other than your hand to clean off the shear table. It is painful when metal slivers get in your hand.
5. Safety glasses protect your eyes from small pieces of metal that may fly up and hit you.
6. Hands should never be placed under the holddowns or safety guards.
7. Keep your fingers free from pinchpoints.
8. Safety shoes must be worn at all times.
9. Keep tools and other material not in use in their proper place away from the shear table.
10. Wear proper fitting gloves to protect your hands from rough or sharp edges.
11. Be sure material is held by at least one holddown before shearing.
12. Operate the shear only when you are sure everyone is away from the rear area of the shear.
13. Be sure everyone is clear of all moving parts before operating the machine.
14. Turn the machine off and take the key when you leave the machine, even if it is only for a few minutes.

Read the shear safety rules and answer the following questions.

1. Why is it important to keep your hands away from holddowns and safety guards? **The holddowns exert a tremendous amount of force when activated and when activated the shear machine will cut anything that has entered the work area.**

2. What do we mean by "proper fitting gloves" and why is it necessary that gloves fit properly? **Proper fitting gloves should fit the hands and fingers snugly to keep them from getting caught in machinery.**

3. Why is it necessary for the material to be held by at least one holddown device before shearing? **Holddown devices prevent the accidental tip-up of the material when the shear is activated.**

4. Why is it important to know how to operate the machine? **Knowing how to operate the machine can prevent damage to the machine and injury to human life.**

5. Why should you use a hand tool to help you position pieces or to remove small pieces? **Using a hand tool can help keep hands from being injured.**

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners record the direction for painting a wall. Ask for 2 or 3 volunteers to read their directions. Did they include all the necessary steps? (e.g., preparing the wall, mixing the paint, taking the lid off the can, etc.) Discuss the importance of knowing and following correct job procedures.	Paper	10 - 15 minutes
	Guided Practice Have learners assist you in making a list of the steps that are necessary to complete the job of shear operator. Discuss the shear operator procedure and product packaging procedures. Introduce Vocabulary	Markerboard Kit Workbook	15 - 20 minutes
	Applied Practice Have learners complete the workbook exercises.	Workbook	20 minutes
	Closure Discuss the workbook exercises.		5 - 10 minutes

Job Vocabulary

Bow - The arching of the sheared material.

Twist - The spiraling of a cut-off piece due to shearing.

Camber - The inward or outward curving along the edges of a sheared strip.

Inspection - Checking measurements to insure pieces conform to specifications.

Customer Requirements - Special instructions from the customer about how things are to be processed and/or packaged.

Nonconforming - Not within specifications.

Process - To shear pieces to the desired size.

Sample - The first part sheared.

Procedure - The method of doing something.

Strand - The single metal strip which forms the border of the diamond on expanded metal.

Bond - The point where adjacent strands on expanded metal intersect. The bond is always twice the width of the strand.

Short Way of Diamond (SWD) - The dimension measured across the short way of the diamond.

Long Way of Diamond (LWD) - The dimension measured across the long way of the diamond.

Pitch - The distance from a point on one diamond to the corresponding point of the next diamond. Pitch may be referred to as Pitch SWD or Pitch LWD.

Single Stroke Mode - Mode in which the shear will only stroke until the footswitch is released and allowed to return to its idle position.

Continuous Mode - The mode in which the shear will continue to cycle as long as the footswitch is held depressed.

Edge Protectors - Cardboard used to protect the edges from damage by banding.

Logo Paper - Moisture proof paper used to package material that could suffer damage due to moisture.

Shear Operator Procedure

1.0 Review work order document.

2.0 Check material to be processed for grade, thickness, length and width before making the first cut.

3.0 Set up machine.

4.0 The following steps are necessary if no additional in-house processing is required:

    4.1 Process sample parts.
    4.2 Operator inspection is required.
    4.3 Complete order with random inspection and package per customer requirements.
    4.4 Fill out appropriate tag and/or mark material with order number and piece count.
    4.5 Complete work order document.
    4.6 Place order in appropriate area.

5.0 The following steps are necessary if additional in-house processing is required:

    5.1 Process sample part.
    5.2 Operator inspection is required.
    5.3 Complete with random inspection and package per customer requirements.
    5.4 Fill out appropriate tag and/or mark material with order number and piece count.
    5.5 Complete work order document.
    5.6 Place order in the appropriate staging area.

6.0 The following steps are necessary if the operator finds nonconforming parts:
    6.1 Contact the supervisor or Q.A. for directions.

Read the Shear Operator Procedure and answer the following questions.

1. The Shear Operator Procedure includes six main steps. List the six main steps in order.

    1. **Review work order document.**
    2. **Check material to be processed.**
    3. **Set up machine.**
    4. **Steps if no additional in-house processing is required.**
    5. **Steps if additional in-house processing is required.**
    6. **Steps to follow if nonconforming parts are found.**

2. Steps numbered four and five have similar sub-steps. What are the similarities in these steps. **Process sample parts, operator inspection is required, complete order with random inspection and package per customer requirements, fill out appropriate tag and/or mark material with order number and piece count, and complete work order document.**

3. The difference in steps four and five is sub-step six. Sub-step six on number five says, “Place order in the appropriate staging area.” What does “staging area” mean? **The staging area is the laydown area of the machine that will process the material next.**

4. What should you do if you find a nonconforming part? **Contact the supervisor or QA for directions.**

5. The following sub-steps are out of sequence. Number each sub-step to indicate the correct order.

5 Complete the work order document.
2 Operator inspection is required.
4 Fill out appropriate tag and/or mark material with order number and piece count.
1 Process sample part.
3 Complete order with random inspection and package per customer requirements.

6. Completed parts are tagged with a white tag. What color should be put on pieces that require additional in-house processing? **Pink**

Packaging Procedures

Aluminum Plate

1. Before packaging, all saw cut aluminum plate must have saw chips removed from the material.
2. If material is placed on a pallet, layers must be separated with a "cush-pak", double faced cardboard.
3. Pallets must be wrapped in moisture proof logo paper and secured with bands.
4. One piece orders must be protected with cardboard wrapping.
5. Edge protectors must be used when banding.
6. Each package must be identified with the order number, type of material, number of pieces, number of bundles and color coded.

Read the packaging procedure on the preceding page and answer the questions.

1. How should pallets of Aluminum plate be packaged?
Pallets must be wrapped in moisture proof logo paper and secured with bands.

2. How will someone know what is in the packaging after it leaves the work area? **Each package of material must be identified with the order number, type of material, number of pieces and size.**

3. How should trailer roof material be packaged? **Trailer roof material must be in a fiber drum then wrapped with logo paper.**

4. List the steps that should be followed to wrap a skid.
Place sheet of double faced cardboard on the appropriate size wood skid.
Place material on next, not to exceed 10,000 pounds.
Place a sheet of double faced cardboard on top of the material.
Wrap skid of material with logo moisture proof paper.
Band with 2 bands longitudinal and one band transverse at the middle.
Use edge protectors when banding.
This procedure is subject to customer requirements.

Instructor Notes	Activities	Materials	Time
	Set Induction Have volunteer learners choose a card to act out. Have remaining learners guess what each rule is as it is being acted out.	Cards	10 - 15 minutes
	Guided Practice Have learners assist you in listing some rules for operating the shear. Ask learners why rules are necessary. Ask what might happen if there were no rules.	Markerboard Kit	15 - 20 minutes
	Applied Practice Have learners complete workbook exercises.	Workbook	10 - 15 minutes
	Closure Check the workbook exercises.		10 minutes

Operating Procedures And Rules

There are procedures and rules for operating the shears. These procedures and rules are designed to promote accuracy in using the shear and to prevent personal injury or machine damage.

1. Material being sheared should be within the capacity of the shear.

2. Material should be clamped by as many holddowns as possible. The holddowns help prevent tip-up of the material during shearing. Some possible causes of tip-up are material over the capacity of the shear, dull knives, improper knife clearance or inadequate holddown pressure.

3. When positioning the material to be sheared, be sure you are wearing gloves and push the material with the heel of your hands.

4. Gages should be used if applicable, and hands should be removed from the material when the holddowns clamp the material.

5. Shear should be operated in the single stroke mode whenever possible.

6. Periodically remove sheared pieces from the rear of the machine. The shear should not be in operation while the material is being removed. The ram, ram brace, and back gages move up and down with every stroke, which could result in injury to the person removing the sheared pieces.

Shearing Procedure

1. Look at the work order and decide what type of shearing you will be doing and what gages you will use.

2. Make certain the mode selector is in the off position before turning on the shear.

3. Set the gages to their correct positions.

4. Turn the mode selector to the single stroke mode and make a trim cut, if required, from one edge for large sheet or plate.

5. Position each sheet or plate firmly against the gage before shearing.

Read the passage on the preceding pages and answer the questions.

1. How should material be positioned on the shearing table? **The operators should wear gloves and push the material with the heel of their hands. Hand tools should be used when needed.**

2. When is it safe to remove material from the back of the shear? **It is safe to remove material only when the shear is not in operation.**

3. Whenever possible the shear should be operated in the **single stroke** mode.

4. What are the possible causes of tip-up? **Over capacity material, dull knives, improper knife clearance, or inadequate holddown pressure.**

5. Material being sheared should be within the **capacity** of the shear.

6. What does "single stroke" mean? **The shear will make only one stroke until the footswitch is released and allowed to return to its idle position**

Shearing Procedure

The following steps are out of sequence. Place a number next to each step to indicate the correct order.

3 Set the gages to their correct positions.

1 Look at the work order and decide what type of shearing you will be doing and what gages you will use.

5 Position each sheet or plate firmly against the gage before shearing

2 Making certain the mode selector is in the off position, turn on the shear.

4 Turn the mode selector to the single stroke mode and make a trim cut, if required, from one edge for large sheet or plate.

Pictures of Expanded Metal would be pasted here.

Shearing Expanded Metal

Expanded metal can be sheared in different ways. The x-metal can be either side sheared or end sheared. Side shearing is the process of cutting a piece of expanded metal parallel to the long dimension of the diamond. The two types of side shearing are random side shearing and bond side shearing. Random side shearing is a cut made parallel to the LWD dimension of the sheet that usually leaves open diamonds. The standard tolerance the SWD is plus or minus 1/16" when both sides are sheared. Bond side shearing is made along the length of the sheet down the center line of the bond and continues over the specified width. In most cases it is not practical to attempt to bond shear either regular or flattened expanded metal, because of camber.

End shearing is the process of cutting a piece of expanded metal parallel to the short way of the diamond. The two types of end shearing are end random shearing and end bond shearing. End random shearing is the process of shearing a piece of expanded metal to a specified length the LWD. A plus or minus tolerance applies when both ends are sheared. One end is cut on the bond parallel to the SWD and the other end usually has open diamonds. When end of bond shearing is requested for both ends, the sheet is sheared at the center line of the bond over the specified length. A tolerance of minus 0 plus 1/2 diamond applies. Although it is possible to end bond shear, extraordinary care must be exercised to maintain the squareness of the sheet. When all four sides of a sheet of expanded metal are sheared, the maximum tolerance will be plus or minus 1/16" per foot of width.

Read the passage on the previous page and fill in the blanks.

1. Expanded metal can either be side sheared or **end sheared**.

2. Random side shearing is a cut made parallel to the **LWD**.

3. When side shearing expanded metal the standard tolerance the SWD is **plus or minus 1/16"** when both sides are sheared.

4. End shearing is the process of cutting a piece of expanded metal **parallel** to the SWD.

5. When all four sides of a sheet of expanded metal are sheared, the maximum tolerance will be plus or minus 1/16" per **foot of width**.

6. **Label the picture below with the following terms:** side bond sheared, side random sheared, end bond sheared, and end random sheared.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners list the information necessary to shear an order. Ask what key words would help them find this information.		10 minutes
	Guided Practice Discuss the sections of a shear cutting card. Explain how to locate information on the cutting card and how to perform and record quality inspections.	Overhead Projector and Transparency	15 - 20 minutes
	Applied Practice Have learners complete the workbook exercises.	Workbook Crossword Puzzle in Workbook	15 - 20 minutes
	Closure Check the exercises and discuss any problems.		10 - 15 minutes

Copies of Cutting Cards would be placed here.

Cutting Cards

The **Pulled By** block is the place for the person pulling material to be processed to write his initials. The initials indicate the material has been pulled.

The operator who processes the material should write his/her initials and the date the order was completed in the **Cut By** block.

The number in the **CC (Cutting Card)** block lets the operator know how many cutting cards have been printed for this order.

The **Salesperson** block is the salesperson who received the order from the customer and entered it into our order filling system.

Each order received from a customer is assigned an **Order Number**. The order number is a 7 digit number (Ex.WH55555). The letters indicate if the order is a Birmingham warehouse order (WH), another district order (B-), or warehouse transfer (WT). (*Greensboro is identified by the number 2.)

Internal Instructions are instructions for employees. It could indicate shuttle loads, re-writes, customer or district needs. This is one way of communicating information about orders internally.

Est. Ship Wt. is the estimated shipping weight of an entire order.

Customer Instructions are instructions the customer has given the salesperson. Every customer has certain procedures they consider important for the material. These instructions are very important. Always read and follow these instructions thoroughly.

The **Qty** block indicates the number of pieces the customer has ordered of that particular line item.

The **Description** block describes the type of material and size that has been ordered. The part number (PN), tolerance information, material information and what size material the order should be cut from will appear in this block.

The **Width (Inches.)** block is the width measurement of the material. The width is always the shortest dimension.

The **Length** block is the length measurement for material and is shown in feet and inches. The length is always the longest dimension.

The **Shipping Wt.** is weight of the material or parts being shipped.

Each stock size item in our inventory is assigned a different **Item #** . Each number has 7 digits. The first two numbers indicate the type of material, ex. - Item # 0516701 - The 05 indicates that the material is Floor Plate and Sheet. The 16701 identifies a specific size of floor plate or sheet.

The **Cut From** block is where the operator will write in the size and number of pieces of material used to fill the order.

Res (reserved) is the number of pieces of stock set aside to fill the order.

For non-processed material, the **Location** block informs the Material Handler and/or Operator which bay the material is in and what bin or floor location to find the material.

Some material is identified by a color coding system. If there is a color in the **Color Code** block the material will have that color painted on the edges.

When the customer buys material that needs processing, a processing code will appear in the **Machine** block. This indicates what type of machine processing is required for the material. When looking for the material or parts to load on the trailer, look in the lay down area for that particular machine.

The **Drops** block is where the operator will write in the size and number of drops (material left over after processing) from an order.

Theo. Wt (Theoretical Weight) is the weight of material before processing. This amount of weight determines the selling price. This weight is automatically calculated by the system.

No Bdls block is filled in by the operator. This informs the warehouse how many bundles or skids were created by the order.

There is not a designated block for the heat number. **Remember: Always record the heat number for material on all cutting cards.**

Locate and interpret the following. Fill in the blanks making sure you are using the correct cutting card for each section. The cutting cards are labeled A, B, C at the top.

Shear Cutting Card A

1. The order is for **100** pieces of **X-Metal.**

2. The measurements for the parts are **14 7/16"** wide by **37 9/16 or 3' 1 9/16"** long.

3. The part number is **141826** and the tolerance is **± 1/16**.

4. The machine code is **K** which means that the order is for the **1/4" Shear** in bay 6.

Shear Cutting Card B

1. The order number is **WH34806**.

2. Line 002 is a **rewrite** from WH33120, because only 2 pieces of a 3 piece order were shipped.

Shear Cutting Card B con't

3. Item number 0412001 is **A36 HR** plate 1/4" thick. What is the ship weight for the same part? **1,047**

4. The description says the part has already been cut by 4512 burning machine, job number **40280**.

Shear Cutting Card C

1. Item number 0428551 is **A36 HR** plate.

2. Line 013 is for **120** pieces of A36 HR plate 5/8" thick.

3. The heat number for item number 0428401 is **HN989L0591**.

4. Item number 0428551 is 12 **inches** wide and **12** feet long.

5. The customer for this order is **Boeing Aerospace.**

In-process Inspection Guidelines For All Processes

Order Quantity	Qty. To Inspect	Rejects Cannot Exceed
1-3	All	1
4-10	3	1
11-20	4	2
21-50	5	2
51-100	10	3
101-200	15	4
200-500	20	5

The following steps are necessary to assure all inspections are done correctly.

A. The operator will use the back of the cutting card under "parts inspection record" to log dimensions.

B. The dimensions taken are as follows:
   1. Thickness, with Mics or Calipers
   2. Width, English or MM
   3. Length, English or MM
   4. Inside dimensions, hole or cut-out in a part
   5. Critical tolerances, noted on the cutting card or on print

C. The number of parts inspected are per Inspection guidelines.

Note: If you exceed the reject quantity shown, you must inspect the entire order. The number of rejects in the column does not mean that you can ship those parts. We will not ship parts to the customer that we know are out-of-tolerance.

Example: You have an order for 100 pieces. You must inspect 10 pieces of the order. This means you inspect 1 out of every 10 pieces throughout the order. It does not mean inspect the first 10 parts produced. If you find 3 or more rejects, you must sort the entire order.

D. The operator is responsible for numbering the inspected parts, #1, #2, #3 and so on. These parts are to be placed on top of other pieces on the order.

E. If the number of inspected parts exceeds 10 pieces, use form #106A to complete the inspection. These forms are located at work stations throughout the warehouse.

F. It is the responsibility of the area supervisor to insure that the operators are inspecting and recording all necessary information.

G. If parts require more than one process, each operator involved is required to do operator inspection on the back of the same work copy.

Quality assurance will assist or become involved at the request of the operator or area supervisor.

A copy of an inspection record would be placed here.

Look at the inspection record and answer the following.

1. The part is 14 7/16" wide by 37 9/16" long.
   What is the maximum width allowed? **14 1/2"**
   What is the minimum width allowed? **37 5/8"**

2. Are all of the parts within tolerance? If not, which measurements are out of tolerance? **No, inspection number 8 is plus 1/8 on the width and minus 1/8 on the length.**

3. The part or parts out of tolerance measures **14 9/16** wide and **37 1/2** long.

Read the in-process inspection guidelines and answer the following.

1. The order is for 42 parts. How many of these 42 parts should be inspected? **5**

2. If the number of rejects exceed the reject quantity shown on the chart, you must inspect the **entire order**.

3. For a 100 piece order you should inspect one out of every **10** pieces processed.

Instructor Notes	Activities	Materials	Time
	Set Induction Give learners the telephone sheet. Tell them they have one minute to fill in the numbers, letters and symbols. Show correct answers and ask how many answered correctly. Discuss how details can be missed even though you look at it everyday. Ask learners to describe the CNC shear control. How many can remember every feature of the CNC?	Telephone Sheets Overhead Projector Transparency	5 - 10 minutes
	Guided Practice Show overhead of the CNC Control and ask learners to assist you in labeling the features. Ask for specific details. Discuss the function of each feature.	Overhead Projector and Transparency	15 - 20 minutes
	Applied Practice Have learners work in pairs to complete the exercises in their workbook. Learners should discuss and agree upon answers.	Workbook	15 - 20 minutes
	Closure Discuss how attention to detail might help them on the job.		10 - 15 minutes

Read the following and discuss with a partner.

1. **Emergency Stop Button** - The emergency stop button turns off the motor and stops all movement of the ram and gages.

2. **Main Drive Start/On Button** - The main drive motor starts when this button is pressed. A green light will come on indicating that the motor has started.

3. **Main Drive Stop Button** - Pressing the stop button will turn the power off to the motor.

4. **Operator Controls Selector** - The operator control selector switch is a two-position key switch. When the key is turned to the on position all operator controls are active. When the key is turned to the off position all ram and back gage movement is prevented.

5. **Lights** - The lights illuminate the work area and provide a shadow line on the material to indicate the line on which the material will be cut.

6. **Mode Selector** - The mode selector switch is key operated and has 4 positions, the off position, the inch position, the single stroke position and the continuous stroke position. In the "off" position all ram movement is deactivated. In the "single stroke" position the shear will make only one stroke until the footswitch is released and allowed to return to its idle position.

7. **Run/Program Switch** - The run/program switch is another key operated switch. In the "program" position the operator can enter a new program or change an existing one. In the "run" position the operator can start gage movement and cycle the shear.

8. **CRT and Soft Keys** - The "CRT" is a visual display of gage positions and shear status information. The eight "soft keys" located below the CRT display, command a variety of operations. When a soft key is pressed the command will be executed and the command message inside each menu block will change, depending on the mode of operation selected.

9. **Numeric Keyboard** - The numeric keyboard has ten numeric keys, a decimal point and an "ENT" key for entering program information.

10. **Mode Buttons** - There are four rectangular buttons which control the mode of operation. The buttons are located over the numeric keyboard. The "manual data input" mode allows the operator to position the front and back gages to make one or two cuts. The "line display" mode allows the operator to enter and store programs in the shear memory. The programs can be retrieved, edited or deleted in this mode.
    The "position display" mode is used to run the program after it has been entered.
    The "shear status" mode shows production control information.

A copy of a CNC control center would be placed here.

Complete the following exercises.

1. Label the switches on the CNC control center.

Fill in the blanks.

2. The **single stroke** mode is the preferred mode of operation.

3. The "CRT" is a visual display of gage positions and shear status information.

4. When a switch is in the run position the operator can start **gage movement** and **cycle** the shear.

5. The **line display** mode allows the operator to enter and store programs in the shear memory.

Answer the questions below.

6. What is the purpose of the lights on the shear? **The lights illuminate the work area and provide a shadow line on the material to indicate the line on which the material will be cut.**

7. Why is it important to know where the emergency stop button is? **Accept any reasonable answer.**

8. What is the function of the numeric keyboard? **The numeric keyboard is used for entering program information.**

9. What happens when you press the main drive stop button? **Pressing the main drive stop button turns off the power to the motor.**

10. How many mode buttons are there? **4**
Name the mode buttons and state the function of each.
Manual input data - This mode allows the operator to position the front and back gages to make one or two cuts.
Line display mode - This mode allows the operator to enter and store programs in the shear memory. Programs can be retrieved, edited or deleted in this mode.
Position display mode - This mode is used to run the program after it has been entered.
Shear status mode - The shear status mode shows production control information.

Instructor Notes	Activities	Materials	Time
	Set Induction		
	Read "What Went Wrong?" and discuss how this situation could have been avoided.	Workbook	5 - 10 minutes
	Guided Practice		
	Show transparency of problem solving steps. Read and discuss each one. Show transparency of cutting card B. Have learners follow along in their workbook as you read the cutting card information. Ask for their assistance in answering the problem solving questions.	Overhead Projector, Transparency, Workbook	15 - 20 minutes
	Applied Practice		
	Have learners read the case studies and answer the questions for each one.	Workbook	15 - 20 minutes
	Closure		
	Discuss answers as a whole group.		10 - 15 minutes

What Went Wrong?

This is a story of four people: Everybody, Somebody, Anybody and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry because it was Everybody's job. Everybody thought that Somebody would do it, but Nobody asked Anybody. It ended up that the job wasn't done and Everybody blamed Somebody when actually Nobody asked Anybody.

Source Unknown

Problem Solving Steps

1. State the problem.
2. State the possible solutions.
3. Implement the most feasible solution.
4. Evaluate the effectiveness of the solution.

Case Study #1

You have an order for 110 pieces of X-metal regular. The inspection chart tells you that 15 pieces of this order must be inspected. You have sheared 105 pieces of the 110 piece order, when the inspection is complete. Six of the inspected pieces are out of tolerance

1. What is the problem?
   Parts were sheared after the maximum reject amount had been exceeded.

2. How could this problem have been avoided?
   The operator should have stopped shearing the order as soon as the fifth nonconforming piece was inspected.

3. What must the operator do now?
   The operator must inspect all of the pieces and separate the conforming from the nonconforming pieces.

Case Study #2

You have an order for aluminum plate. As the order is sheared you place it on a pallet with double coated cardboard between each layer. When the last piece is sheared you place it on top of the stack and lay double coated cardboard on top of it. You wrap the pallet with logo paper and band it. The customer receives the order and calls to complain about the edges being damaged where the material was banded.

1. What is the problem?
   Edge protectors were not used when banding the material.

2. How could this have been avoided?
   Always be sure that proper procedures are followed.

3. Where do you look to find this information while on the job?
   Each machine area has a notebook in which this type of information can be found.

Case Study #3

It is near the end of the shift on Friday. You have just finished the inspection for a 30 piece order. One of the pieces was out of tolerance. You set the piece aside and continue to shear the remainder of the order. The buzzer sounds and you go home.

One of the operators on the next shift has been working at the company for one week and the other has only been working here for three months. They finish the order you have started and it is picked up for shipment. They finish their shift and go home.

On Monday you remember the nonconforming part. When you cannot find it you ask your supervisor what happened to it. He does not know what you are talking about.

1. What is the problem?
   A nonconforming part was shipped to the customer.

2. What are some possible solutions?
   Accept any reasonable answer.

3. What are the consequences of these solutions?
   Accept any reasonable answer (i.e. loss of a customer, cost of retrieving part, cost of shearing and re-shipping part etc.)

4. What do you think is the best solution and why?
   The operator inspecting the piece should have tagged the piece with a nonconforming material tag and notified the supervisor for that area.

Instructor Notes	Activities	Materials	Time
	Set Induction Crossword Puzzle - Allow learners to work together if they choose.	Workbook	5 - 10 minutes
	Guided Practice Have learners follow along with you as you take a look at the contents page of the Safety Manual. Have learners help you locate information about: 1. Protective equipment - locate number 5 and have someone read it.; 2. Attitudes - locate number 3 and have someone read it.; 3. Cranes and Hoists Operation - locate 6L and have someone read it. Discuss Safety Regulations and why it is important for all employees to follow them.	Safety Manual, Protective Equipment, p. 28, Attitudes, p. 2 and Cranes and Hoists Operations p. 5 - 9	15 - 20 minutes
	Applied practice Have learners read "Material Handling", pages 21 - 24 and complete the exercises in their workbook.	Safety Manual, Workbook	10 - 15 minutes
	Closure Discuss answers as a whole group. Vocabulary Review		10 - 15 minutes

SAFETY

1. List the four types of hook ups and in your own words, tell what you know about each.
   Sling Chains - Overloading a chain will cause it to stretch or break. Place chains at each end of the load at least six inches from the end. Never try to balance the load with one chain.
   Lifting Clamps - Always use the proper size clamp. Make sure the load is balanced before lifting.
   Hooks - Make sure that the hook is completely under the load and that the load is balanced. When you are sure the hook is in place, move away from the load. Hooks should not be used on very thin sheets.
   Sheet lifters - Be sure that the sheet lifter is loaded properly* before lifting sheets. Be sure that the load is balanced.

   ***(Ask learners what "loading properly" means.) Loaded Properly - When the sheet lifters are resting against the edge of the sheets without having the material bow or move in the sheet lifters.**

   **** Accept any reasonable answer for what they know about each of the hook ups.**

2. Tell why everyone should stay away from the drop zone of operating cranes.
   Accept any reasonable answer.

3. What could happen if you are not aware of your surroundings?
   When a person is not aware of his/her surroundings, accidents could happen. When you are alert, you look for potential dangers in your surroundings.

4. Why is safety such an important issue?
   Safety is important because the company cares about the well being of their employees. The company takes their responsibility to comply with OSHA (Occupational Safety and Health Act) Standards seriously. It is also the employees responsibility to protect themselves and their co-workers from harm. It is also how each person protects the quality of life they brought to the company.

5. The Safety Manual talks about "attitude". Why is it important to have a good attitude?
   It is important to have a good attitude because employees with good attitudes are more alert. They know what is going on around them, and they don't take chances.

6. What is wrong with the attitude, "It is not going to happen to me."?
   When you have this feeling, you begin to become less aware of your surroundings and you let your guard down, leaving yourself vulnerable to potential dangers, not only at work, but in your life outside work also.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners interpret visual and written communications. Learners should record what each picture and/or group of words means. Allow learners to communicate with each other to figure these out.	Workbook	5 - 10 minutes
	Guided Practice Have learners tell you codes and abbreviations they would see on the job. Record the codes and abbreviations on the markerboard. Ask learners to define each one. Discuss the importance of knowing the codes and abbreviations in reference to the loading job.	Markerboard Kit	10 - 15 minutes
	Applied Practice Have learners complete the exercises in their workbook.	Workbook	20 - 25 minutes
	Closure Discuss how this lesson will help them remember the codes and abbreviations on the job.		10 minutes

Match each code or abbreviation to the word/words it represents. Write the number next to the word/words.

1. AOS
2. BHN
3. CQ
4. GRTG
5. HT
6. MTR
7. NH
8. OD
9. PN
10. RD
11. SERR
12. THEO. WT.
13. TP
14. X-METAL
15. #
16. BOL
17. CD
18. GS
19. HR
20. HR L
21. MISC
22. SS
23. STR
24. TRAILER NO.
25. TB
26. AR
27. FBRGLS
28. RWL
29. PTD
30. PF PL

11 Serrated
16 Bill of Lading
10 Round
23 Structural
13 Turned & Polished
6 Matching Test Report
19 Hot Rolled
15 Number or Pound
2 Brinell Hardness
17 Cold Drawn
22 Stainless Steel
3 Commercial Quality
1 All of Stock
27 Fiberglass
9 Part Number
30 Perforated Plate
7 No Heat Number
24 Trailer Number
18 Grip Strut
25 Tube
12 Theoretical Weight
8 Outside Diameter
14 Expanded Metal
20 Hot Rolled Angle
5 Heat Number
28 Random Width & Length
4 Grating
29 Painted
26 Abrasion Resisting
21 Miscellaneous

Write the meaning for the following codes and abbreviations.

1. AL - **aluminum**
2. BND - **bundle**
3. CF - **cold finish**
4. GALV - **galvanized**
5. HEX - **hexagon**
6. ID - **inside diameter**
7. JR - **junior**
8. LWD - **long way of diamond**
9. MAX - **maximum**
10. N/P - **no paint**
11. OT - **our truck**
12. PO - **purchase order**
13. RW - **re-write**
14. SMLS - **seamless**
15. TGP - **turned, ground, & polished**
16. XHVY - **extra heavy**
17. HLW - **hollow**
18. CHAN - **channel**
19. GR - **grade**
20. MATL - **material**
21. SCH - **schedule**
22. STD - **standard**
23. SWD - **short way of diamond**
24. TOL - **tolerance**
25. HR C - **Hot Rolled Channel**
26. HR SHT - **Hot Rolled Sheet**
27. P & O - **Pickled & Oiled**
28. SQ TUB - **Square Tubing**
29. TRD PL - **Tread Plate (Aluminum)**
30. REG - **Regular (in X-metal, unflattened)**

MORE CODES AND ABBREVIATIONS

1. **HR MC** - Hot Rolled Miscellaneous Channel
2. **HR S** - Hot Rolled Standard or I Beam
3. **HR W** - Hot Rolled Wide Flange Beam
4. **HR BAR C** - Hot Rolled Bar Channel
5. **RE-BAR** - Reinforcing Bar
6. **HR SQ** - Hot Rolled Square
7. **HR FL** - Hot Rolled Flat
8. **HR PL** - Hot Rolled Plate
9. **HR PL FLOOR** - Hot Rolled Floor Plate
10. **HR SHT FLOOR** - Hot Rolled Floor Sheet
11. **CR SHT** - Cold Rolled Sheet
12. **G-ANLD** - Galvannealed
13. **CD HEX** - Cold Drawn Hexagon
14. **CD SQ** - Cold Drawn Square
15. **CD FL** - Cold Drawn Flat
16. **DOM EW** - Drawn Over Mandrel Electrical Welded
17. **CD BW** - Cold Drawn Butt Welded
18. **CD SM** - Cold Drawn Seamless
19. **HF SM** - Hot Finished Seamless
20. **RD TUB** - Round Tubing
21. **RECT TUB** - Rectangular Tubing
22. **ST TRD** - Stair Tread
23. **PF SH** - Perforated Sheet
24. **G/S BARE** - Grip Strut Bare (Ungalvannized)
25. **G/S GALV** - Grip Strut Galvanized
26. **GR FL** - Ground Flat
27. **TRD BRITE** - Tread Plate (Aluminum with bright, shiny finish)
28. **ROD** - Round Aluminum Bar

Instructor Notes	Activities	Materials	Time
	Set Induction Hand out sheets and have learners get everyone in the group to sign a square if they can identify the shape in that square. The person must correctly identify the shape before they sign the square. The first person finished wins.	Product Identification Sheets	10 minutes
	Guided Practice Show the structural shapes one at a time and have learners help you identify them. Guide learners through the steps taken to measure each shape.	Overhead projector, transparency, Workbook	15 - 20 minutes
	Applied Practice Give learners samples to identify and measure. Have them complete the exercise in their workbook.	Structural shape samples, Workbook	20 - 30 minutes
	Closure Discuss the exercise.		5 - 10 minutes

Pictures of the material would be placed here.

MEASUREMENT OF STRUCTURAL SHAPES

Ex.: HR W 12 x 14 40' 0"

WIDE FLANGE

12" Is the section depth
14# Is the weight per foot*
40' Is the beam length

Ex.: HR S 18 x 70 60' 0"

STANDARD OR I BEAM

18" Is the section depth
70# Is the weight per foot
60' Is the beam length

Ex.: HR C 6 x 13 40' 0"

CHANNEL

6" Is the section depth
13# Is the weight per foot
40' Is the channel length

* See "Beam Channel Weight Per Foot" Chart

Ex.: HR L 3 x 3 x 3/16 20' 0"

EQUAL LEG ANGLE

3" Is one leg length
3" Is the other leg length
3/16" Is the leg thickness
20' Is the length of the angle

Ex.: HR L 6 x 4 x 3/8 20' 0"

UNEQUAL LEG ANGLE

6" Is one leg length
4" Is the other leg length
3/8" Is the leg thickness
20' Is the length of the angle

Ex.: HR W TEE 5 x 15 20' 0"

WIDE FLANGE TEE

5" Is the section depth
15# Is the weight per foot
20' Is the length of the tee

* See "Beam Channel Weight Per Foot" Chart

STRUCTURAL

Fill in the blanks and solve the problems. Measure each of the samples and record your measurements.

1. The sample is **channel.**
The section depth of the piece is ________________.
If the weight per foot is 13#, what does a 40' length of channel weigh? **520#**

2. This sample is HR W TEE. What does that mean? **Hot Rolled Wide Flange T**.
To measure this part hold the end of the tape at the top of the **flange** and pull down to the bottom of the **web.** Read and record the measurement. __________________

3. This sample is HR STD I BEAM. What does that mean? **Hot Rolled Standard "I" Beam**
The measurement of a HR STD I BEAM to be loaded on the truck is 18 x 70 20' 0".
The beam length is **20 feet.**
The section depth is **18 inches.**
The weight per foot is **70#.**
What does the beam weigh? **1400#**
Measure and record the section depth of this piece. ______________________

4. HR L 6 x 4 x 3/8 20' 0"
What is this? **Hot Rolled unequal leg angle**
The length of the **longer** leg is always expressed first.
3/8 is the leg **thickness**.
The length of the shortest leg is **4**.

5. What is the sample? **HR W WIDE FLANGE or HOT ROLLED WIDE FLANGE 12 x 14 40' 0"**
12" is the **section depth.**
The beam **length** is 40' 0".
The **weight** of this beam is **560**#.
Measure and record the section depth of this piece. ____________________

6. HR ANGLE forms a **right or 90°** angle.
HR ANGLE 3 x 3 x 3/16 20' 0"
3 x 3 is the length of the two legs.
How thick is the leg? **3/16"**
The length of the angle described is **20' 0".**
Measure and record the length of each leg and the leg thickness.
____________________ leg length
____________________ leg length
____________________ leg thickness

Instructor Notes	Activities	Materials	Time
	Set Induction Read the list of questions and have the learners answer them. Tell learners to answer the questions only if they can answer it completely. Discuss techniques that can be used to help remember things.	Workbook	5 - 10 minutes
	Guided Practice Show examples of bar shapes and model the thinking steps involved in identifying the shapes. Ask for learners assistance in determining how to measure each shape.	Overhead projector, transparency, Workbook	15 - 20 minutes
	Applied Practice Have learners complete the exercises in their workbook. Assist learners if necessary.	Workbook	20 - 30 minutes
	Closure Discuss how being able to identify bar shapes will help them on the job.		5 minutes

QUESTIONS

1. Who was your first grade teacher?
2. What did you have for lunch on Monday three weeks ago?
3. What was the name of the first person you dated?

DISCUSSION

1. Why do we remember some things and not others?
2. What can we do to help us remember things that we have to remember in order to perform our job. (Repeat them, associate them with other things, use them as often as possible.)

Pictures of the material would be placed here.

MEASUREMENT OF BAR SHAPES

Ex.: HR FL 3/16 x 2 20' 0"

FLAT

3/16" Is the section thickness
2" Is the section width
20' Is the length of the bar

Ex.: CD HEX 1 1/8 9' 0"

HEXAGON

1 1/8" Is the distance across the flats.
9' Is the length of the bar.

Ex.: HR RD 7/16 20' 0"

ROUND

7/16" Is the diameter
20' Is the length of the bar

Ex.: HR L 1/2 x 1/2 x 1/8 20' 0"

ANGLE

1/2" Is one leg length
1/2" Is the other leg length
1/8" Is the leg thickness
20' Is the length of the bar size angle

Ex.: HR BAR C 1 x 3/8 x 1/8 20' 0"

BAR CHANNEL

1" Is the section depth
3/8" Is the flange width
1/8" Is the flange thickness
20' Is the length of the bar size channel

Ex.: HR SQ 1 1/8" 20' 0"

SQUARE BAR

1 1/8" Is the width across the flats.
20' Is the length of the bar.

Note: Bar Angles, Channels and Tees have dimensions of less then 3". Once the products are produced with at least one dimension of 3". They are known as structural products.

BAR

Match the bar shape with the description by placing the number for the shape in the blank next to the description.

1. ___8___ CARBON CHISEL OCT

2. ___5___ HR BAR CHANNEL

3. ___7___ HR SQUARE

4. ___3___ HR FLAT

5. ___1___ CD HEX

6. ___4___ HR ANGLE

7. ___2___ HR ROUND

8. ___6___ HR TEE

Measure the 8 pieces and record the measurements for each.

1. HR FLAT ______________ thickness
______________ width

2. CD HEX ______________ distance across the flats

3. HR ROUND ______________ diameter

4. HR ANGLE ______________ length of leg
______________ length of other leg
______________ thickness of leg

5. HR BAR CHANNEL ______________ section depth
______________ flange width
______________ flange thickness

6. HR TEE ______________ section depth
______________ flange width
______________ flange thickness

7. HR SQUARE ______________ width across the flats

8. CARBON CHISEL OCT ______________ width across the flats

Instructor Notes	Activities	Materials	Time
	Set Induction Give each learner a card as they come in. Call on a learner to describe the picture on their card and have the others guess the object being described. Continue until all objects are guessed. Was it difficult to describe some of the objects? Why? It is easier to determine what something is if you can see it.	Cards	
	Guided Practice Guide learners in recognizing and measuring hollow tubing and pipe. Discuss the importance of correct measurement.	Overhead projector, Transparency, Workbook	15 - 20 minutes
	Applied Practice Have learners complete the workbook exercise.	Hollow tubing and pipe samples, Workbook	
	Closure Check the workbook exercise and discuss any discrepancies in measurements.		

Pictures of the material would be placed here.

MEASUREMENT OF HOLLOW TUBING AND PIPE

Ex.: SQ TUB 1 1/4 x 14 GA 24' 0"

SQUARE WELDED TUBING

1 1/4" Is the width across the flat.
14 GA Is the wall thickness.
24' Is the length of the tube.

Ex.: RECT TUB 3 x 1 1/2 x 11GA 20' 0"

RECTANGULAR WELDED TUBING

3" Is the section width
1 1/2" Is the section depth
20' Is the length of the tube
11 Gauge is the wall thickness

Ex.: CD SEAMLESS TUBE 1 x 0.25OW 17' 0"

ROUND TUBE

1" Is the outside diameter
.250" Is the wall thickness
17' Is the length of the tube

Ex.: PIPE 6 XHVY SMLS STR GR 21' 0"

6" Is the nominal* inside diameter
XHVY Is the Schedule(Wall or Thickness)
21' Is the length of the pipe

For more information see "Weights & Dimensions of Seamless & Welded Pipe" Chart

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* Nominal - Not in fact, in name only.

TUBING AND PIPE

Answer the questions and fill in the blanks.

1. What is this and how would you measure it? **CD SEAMLESS TUBE measure the outside diameter and the wall thickness.** The outside diameter is _________.
   The wall thickness is _______________________.

2. This is a **SQUARE WELDED TUBE.** The description is 1 1/4" x 14 GA 24' 0". What does that mean? **1 1/4 is the width across the flat, 14 GA is the wall thickness, and 24 feet is the length of the tube.**
   What is the width of the sample pieces? _________________________.

3. The RECT WELDED TUBE is 3 x 1 1/2 x 11 GA 20' 0". What does RECT mean? **Rectangular** 11 GA is the wall thickness. What is the maximum and minimum measurement for 11 GA?
   _______________ maximum _______________ minimum
   Measure and record the following for this sample.
   _______________ section width
   _______________ wall thickness
   _______________ section depth.

4. This is PIPE 6 XHVY SMLS STR GR
XHVY is the schedule. What does XHVY mean? **Extra heavy**
SMLS means the pipe is **seamless.**
STR GR means **structural grade.**
Measure the pipe. ________________

Remember: The diameter for pipe is an outside measurement.

Instructor Notes	Activities	Materials	Time
	Set Induction Show a sample of plate. Ask is this sheet or plate? How do you know? Show a sample of sheet. Ask is this sheet or plate? How do you know? Show a sample that is too close to tell without measuring. Ask is this sheet or plate? How can you be certain? The only way to be certain is to measure.		5 minutes
	Guided Practice Ask learners to assist you in determining how to measure coil, plate and sheet products. Ex.: 1/4" x 84" x 20' 0". 1/4" is the thickness, 84" is the width and 20' 0" is the length. Ask: Is this sheet or plate? **Plate** How do I know? **Sheet is less than 3/16" and plate is 3/16" or thicker.** Explain that sheet is described in thickness of gauge. Discuss the gauge charts for sheet and coil.	Overhead projector, Transparency, Workbook	15 - 20 minutes
	Applied Practice Have learners complete the workbook exercise.	Workbook	15 - 20 minutes
	Closure Check the workbook exercise and discuss what was learned.		10 - 15 minutes

Pictures of the material would be placed here.

MEASUREMENT OF COIL, PLATE AND SHEET PRODUCTS

Ex.: HR PL 1/4" 84" 20' 0"
PLATE

1/4" Is the thickness
84" Is the width
20' Is the length

All uncoiled products, plate and sheets, are measured by thickness, width and length.

Sheet - The term used to describe flat rolled product when the thickness is less than 3/16". This material is described in thickness of gauge.

Plate - The term used to describe flat rolled product when the thickness is 3/16" or thicker. It is always described in thickness in whole and/or fractions of an inch.

Read and complete the following using the charts when necessary.

1. The thickness of the 16GA coil you just measured is .0596. Is the thickness of the sheet within tolerance? Why or why not? **Yes. The minimum for 16GA coil is .0581 and the maximum is .0650.**

2. A-36 HR Plate 3/16" x 48" x 10' 0" on an order means that the A-36 hot rolled plate is 3/16 inch **thick** 48 **inches** wide and **10 feet long**.

3. What is the minimum thickness for each of the following:
12GA HR Sheet ____________________
12GA Stainless Coil _________________
14GA HR Sheet ____________________
10GA Stainless Coil _________________

4. A piece of flat rolled product with a thickness of 1/8" is **sheet** and is described in thickness of gauge.

5. **Plate** is always described in thickness using whole and/or fractions of an inch.

6. The maximum thickness for stainless coil 5/16 is **.3580**.

7. The order you have for 10GA floor sheet is for 21 pieces. Where do you look to be sure that the measurements you have taken are correct? **The loading papers have the width and length written on them.**

STAINLESS COIL SPECS

Standard Thickness Range

	Min	Max
5/16	.3030	.3580
1/4	.2400	.2950
3/16	.1780	.2330
10GA	.1225	.1465
11GA	.1096	.1296
12GA	.0956	.1136
14GA	.0677	.0817
16GA	.0538	.0658
18GA	.0428	.0528
20GA	.0319	.0399

HOT ROLLED SHEETS

	Flatness Tolerances		
GA.	36 to 60	Over 60 to 72	Over 72
16	3/4	1	1
14	1/2	3/4	1
12	1/2	3/4	1
11	1/2	3/4	1
10	1/2	3/4	1

* This chart is also applicable to Floor Plate and Sheet.

HOT ROLLED PLATES

	Flatness Tolerances					
Thickness in Inches	To Under 36	36 to Under 48	48 to Under 60	60 to Under 72	72 to Under 84	84 to Under 96
To under 1/4	9/16	3/4	15/16	1 1/4	1 3/8	1 1/2
1/4 to under 3/8	1/2	5/8	3/4	15/16	1 1/8	1 1/4
3/8 to under 1/2	1/2	9/16	5/8	5/8	3/4	7/8
1/2 to under 3/4	7/16	1/2	9/16	5/8	5/8	3/4

Instructor Notes	Activities	Materials	Time
	Set Induction Have 3 learners reach in the boxes and describe what they feel. Have the other learners guess what they are describing. Was it difficult to picture what was being described? As a loader you have to visualize how things look but you also have to check the measurement to insure they are correct.	3 boxes samples	5 - 10 minutes
	Guided Practice Display the transparency and discuss the measurements shown. (How to read it on the loading papers and how to interpret each of the examples) Ask learners how to measure aluminum tread plate, HR floor plate and floor sheet, and grating. Remind learners not to measure thickness on the raised areas.	Overhead projector, Transparency, Samples	15 minutes
	Applied Practice Have learners work in pairs to measure the samples. Both partners should measure the samples and they must agree on the measurement. Have learners complete the workbook exercise.	Samples, Workbook	20 - 25 minutes
	Closure Discuss the exercise as a whole group.	Workbook	10 minutes

Pictures of the material would be placed here.

MEASUREMENT OF ALUMINUM TREAD PLATE

Ex.: AL TREAD PLATE 6061T6 .100 48 16

.100 Is the thickness*
48" Is the width
16' Is the length
6061T6 Identifies Grade

MEASUREMENT OF H. R. FLOOR PLATE AND FLOOR SHEET

Ex.: FLOOR PLATE 5/16 96 20

5/16" Is the thickness*
96" Is the width
20' Is the length

Ex.: FLOOR SHEET 12GA 48 12

12GA Is the thickness*
48" Is the width
12' Is the length

* Measured between lugs

MEASUREMENT OF GRATING

19W4

Ex.: 19W4 GRATING 1 1/2 x 3/16 3 3/4 0'7"

The 4" is the 19W4 indicates the center-to-center distance between the cross bars. The 1 1/2" x 3/16" indicates the size of the bearing bars. The 3 3/4" x 7" indicates the overall width and length of the grating section.

Type	Nominal	Actual
19W4	1"	1 3/16"
19W2	1"	1 3/16"
15W4	3/4"	.915"**
15W2	3/4"	.915"**
11W4	1/2"	11/16"
11W2	1/2"	11/16"

*Nominal - Not in fact; in name only.

**.915" is between 7/8" and 15/16" or about 29/32".

You have discussed how to measure aluminum tread plate, H. R. floor plate,sheet and grating.

1. Measure the samples and record each the way it would be recorded on the loading papers. Remember you and your partner must agree on the measurements.

2. You and your partner are asked to help a new employee learn how to measure these samples. Record how you would accomplish this task. Be specific.

Instructor Notes	Activities	Materials	Time
	Set Induction Have samples of grip strut and expanded metal. Give learners a sheet of paper. Have them choose one of the samples and list the measurements that should be taken for that particular sample. Discuss their choices.	Samples, Paper	10 minutes
	Guided Practice Discuss the steps that should be taken to measure grip strut and expanded metal. Show examples and ask for learners assistance in measuring.	Overhead Projector, Transparency, Samples	15 - 20 minutes
	Applied Practice Have learners complete the workbook exercise.	Workbook, samples	15 - 20 minutes
	Closure Check the workbook exercise as a whole group	Workbook	10 minutes

Pictures of the material would be placed here.

MEASUREMENT OF GRIP STRUT

Ex.: GRIP STRUT 14GA x 2 9 1/2 10' 0"

14GA Is the thickness
2" Is the section depth
10' Is the grating length
9 1/2" Is the section width
measured outside of the legs

Ex.: GRIP STRUT 12GA x 5 WALKWAY 11 3/4 12' 0"

12GA Is the thickness
5" Is the section depth
12' Is the grating length
11 3/4" Is the section width
measured inside the legs

MEASUREMENT OF EXPANDED METAL

Ex.: X-METAL GRATING 3.00# x 48 8' 0"

3# Is the weight per square foot*
48" Is the width
8' Is the length

Ex.: X-METAL REGULAR 16GA x 3/4 48 6' 0"

16GA Is the thickness (not shown)
3/4" Is the short width across the diamond
48" Is the width
6' Is the length

(Regular means this product has not been flattened, its surface is rough & uneven.)

*The weight of X-metal products is identified by color code and should be double checked by the loader against the X-metal color code board.

Note: You will sometimes hear X-metal grating referred to as Gratex...but Gratex is a trade name and will never appear on your orders.

Look at the color code chart on the next page and answer the following.

5. The order is for X-Metal Grating #3. What color(s) should be painted on it? **White**

6. If a piece of X-Metal Grating weighs 6.5 pounds per foot it should have a **gold** stripe painted on it.

7. On a piece of expanded metal that is 13GA 1/2, the base color should be **red** the second stripe should be **green**.

Explain the items listed below. Please be specific.

8. 4.00# X-Metal GRT 48" 10'. **This product is expanded metal grating. 4.00 pounds is the weight per foot. The piece is 48 inches wide and 10 feet long.**

9. #13 1 1/2 Flat X-Metal 48" 8'. **This product is 13 guage flat expanded metal. The short width across the diamond is 1 1/2 inch. The piece is 48 inches wide and 8 feet long. This product has been rolled flat.**

EXPANDED METAL COLOR CODES

1/4” x #20	Black & White
1/4” x #18	Black & Blue
1/2” x #20	Red & White
1/2” x #18	Red & Blue
1/2” x #16	Red & Orange
1/2” x #13	Red & Green
3/4” x #16	Green & Orange
3/4” x #13	Green & Green
3/4” x #10	Green & Gold
3/4” x #9	Green & Red
1’ x #16	White & Orange
1 1/2” x #16	Blue & Orange
1 1/2” x #13	Blue & Green
1 1/2” x #9	Blue & Red
1 1/2” x #6	Blue & Black

Instructor Notes	Activities	Materials	Time
	Set Induction Read "The Blindmen and the Elephant" and talk about the way people can see the same thing and still have a different perspective about it or have a different opinion about it. Explain to the group that loading a truck is the same. Everyone in here could look at the same loading papers and load the trailer in a different way. If you don't load it the way I would, does that mean you loaded it wrong? Definitely not, everyone has their own way of loading trailers.	Communication, The Miracle of Dialogue, Poem: The Blind Men and the Elephant p. 134 - 135	10 minutes
	Guided Practice Explain the areas of the loading papers and with the learners assistance go step-by-step through the process of loading a trailer. Ask: What do I do first, next and so on.	Transparency Loading Paper	10 - 15 minutes
	Applied Practice Have learners complete the exercise in their workbook using the loading papers for their shift.	Workbook, Loading Papers	15 - 20 minutes
	Closure Have each learner tell how he/she would load the trailer. Everyone should listen carefully in order to gain new insight.		15 - 20 minutes

A copy of a Loading Paper would be placed here.

Loading Papers

The **Salesperson** block is the salesperson who received the order from the customer and entered it into our order filling system.

Each order received from a customer is assigned an **Order Number**. The order number is a 7 digit number (2 letters*, 5 numbers). The letters indicate if the order is a Birmingham warehouse order (WH), another district order (B-), or warehouse transfer (WT). (*Greensboro is identified by the number 2.)

Each load is assigned a **Trailer Number**. This is not always a trailer number.

Internal Instructions are instructions for employees. It could indicate shuttle loads, Re-writes, customer or district needs. This is one way of communicating information about orders internally.

Est. Ship Wt. is the estimated shipping weight of an entire order.

Customer Instructions are instructions the customer has given the salesperson. Every customer has certain procedures they consider important for the transport and/or unloading of their material. These instructions are very important. Always read and follow these instructions thoroughly.

The **Qty** block indicates the number of pieces the customer has ordered of that particular line item.

The **Description** block describes the type of material and size that has been ordered. Other instructions may appear in this block, ex. - "Pull From Stock and Load", additional customer instructions or internal instructions (if necessary), RWL (random width or length) or R/L (random length).

The heat number for material is printed in the lower left of the description box, but is not always identified by a HT# or HN prefix. This same number must be on the material being loaded on the trailer.

Theo. Wt (Theoretical Weight) appears in the right lower corner. This is the weight of material before processing. This amount of weight determines the selling price.

Remember: If RWL (stocked in random width and length) or R/L (stocked in random length) appear in the description block the material is stock in random length and/or width. Each piece will need to be measured and each measurement recorded on the loading papers.

The **Width (Inches.)** block is the width measurement of the material.

The **Length** block is the length measurement for material and is shown in feet and inches. If an R/L appears on a Pull From Stock and Load next to the measurement, this lets you know it is a random length order. Measure and record the measurements of each piece on your loading papers.

The **Shipping Wt.** is weight of the material or parts being shipped.

Each stock size item in our inventory is assigned a different **Item #** . Each number has 7 digits. The first two numbers indicate the type of material, ex. - Item # 0516701 - The 05 indicates that the material is Floor Plate and Sheet. The 16701 identifies a specific size of floor plate or sheet.

For non-processed material, the **Location** block informs the loader which bay the material is in and what bin or floor location to find the material.

Some material is identified by a color coding system. If there is a color in the **Color Code** block the material will have that color paint on the edges.

When the customer buys material that needs processing, a processing code will appear in the **Proc Code** block. This indicates what type of machine processing is required for the material. When looking for the material or parts to load on the trailer, look in the lay down area for that particular machine.

When the quantity of an order is greater than the quantity on hand, the change should be written in the **Qty Loaded (If Diff)** block. Also mark through the original quantity with a single diagonal line and write the new quantity near by and circle the new quantity.

District Prefixes

Location	District #	Whse	Trans	B-Prefix
Atlanta	02	AW	AT	BA
Birmingham	01	WH	WT	--
Chattanooga	03	CW	CT	BC
Dallas	25	XW	XT	BX
Evansville	16	IW	IT	BI
Ft. Wayne	20	DW	DT	BD
Greensboro	28	2W	2T	B2
Houston	24	QW	QT	BQ
Jackson	05	JW	JT	BJ
Jacksonville	04	FW	FT	BF
Knoxville	07	KW	KT	BK
Lafayette	11	LW	LT	BL
Little Rock	10	RW	RT	BR
Louisville	18	UW	UT	BU
Lubbock	26	ZW	ZT	BZ
Memphis	14	EW	ET	BE
Mobile	08	GW	GT	BG
Nashville	15	NW	NT	BN
Pittsburgh	30	PW	PT	BP
Savannah	13	VW	VT	BV
Shelbyville	19	HW	HT	BH
Tampa	06	TW	TT	BT
Toledo	21	OW	OT	BO
Waterloo	22	YW	YT	BY

Processing Codes

Code	Description	Code	Description
¢	Saw/Drill/Press Brake	F	Bay 4 VBS
<	Burn/Ironworker	G	Horizontal Band Saw Bay 5
(	Shear/Pressbrake	H	Bay 6 Rowe CTL
+	Shear/Ironworker/Pressbrake	I	Delta CTL
&	Drill Press (Bay 20)	J	Bay 7 Plate Saw
!	Saw/Ironworker	K	Bay 6 1/4" Shear
$	Outside Processing	L	Bay 21 1/4" Shear
)	Saw/Pressbrake	M	Bay 21 3/4" Shear
;	Burn/Pressbrake	N	Bay 6 Rowe CTL/Shear
¬	Saw/Drill	O	Delta CTL/Shear
/	Burn/Pressbrake	P	Bay 8 Cold Saw
%	Pressbrake	Q	Bay 12 HBS Kalamazoo
>	Shear/Ironworker	R	Bay 9 HBS
?	Burn/Drill	\	Saw/Ironworker/Pressbrake
:	Shear/Drill	S	Delta CTL/Burn/Pressbrake
#	Ironworker	T	Delta CTL/Plasma Punch
@	Beam Splitter/Straightener	U	DL CTL/Plasma Punch/Pressbrake
=	Shear/Drill/Pressbrake	V	Edger
“	Burn/Drill/Pressbrake	W	Burning
A	Bay 11 HBS.	X	Burn/Bevel
B	Delta CTL/Shear/Pressbrake	Y	Plasma Punch
C	Bay 1, 2, or 3A HBS	Z	Bay 13 HBS
D	Plasma Punch/Pressbrake	6	Delta CTL/Burn
E	Bay 5 Cold Saw	7	Bay 21 Shear/Edger

Product Numbers and Names

Product Number	Product Name
01	Angles and Channels
02	Beams
03	Hot Rolled Bars
04	Hot Rolled Plates
05	Floor Plate and Sheet
06	Hot Rolled Sheets
07	Cold Rolled Sheets
08	Coated Steel Sheets
09	Cold Finished Bars
10	Seamless Tubing
11	Welded Tubing
12	Heavy Gauge Coils
13	Grating
14	Expanded Metal
15	Floor Plate and Sheet Coil
16	T-1 Plate
17	Nealoy
18	AR Plate
19	Grip Strut
20	Tool Steel
22	Hollow Structurals
23	Pipe
24	Fittings and Flanges
26	Cold Rolled Coil
27	Coated Steel Coil
28	Aluminum Coil
29	Aluminum Common Alloy Sheet
30	Aluminum Heat Treated Sheet
31	Aluminum Plate
32	Aluminum Pipe and Tube
33	Aluminum Structural and Shapes
34	Aluminum Rod Bar and Wire
42	HR Rough Turned Bar
44	Corten Coil
45	Brass
46	Stainless Sheet
47	Stainless Plate
48	Stainless Flat Bars
49	Stainless Round and Square
50	Stainless Angle
51	Stainless Coil
52	Stainless Coil
53	Stainless Pipe and Tubing

TWO CATEGORIES OF LOADS

1. **Sequence Load** - A sequence load is made up of orders to more than one customer. The stops have been sequenced for you. The loading papers have numbers handwritten in the center of the page to identify the stops. Each number also has a circle around it. The material must be loaded on the trailer in sequence. The lowest number represents the last stop and should be loaded first. The highest number represents the first stop and should be loaded last.

2. **One-Stop Load** - A one-stop load goes to a single customer location or another district. It can be for one large order or it can include many smaller orders.

RANDOM LENGTH AND WIDTH MATERIAL

When an order on the loading papers has a R/L, next to the length marking, each piece should be measured. Each measurement should then be recorded on the loading papers and given to your supervisor. Your supervisor will make the necessary dimension changes on the SFC (Shop Floor Change) screen. This will allow us to bill the customer correctly the first time.

Some material is stocked in random width and length. These orders will have a RWL in the description block of the loading papers. Measure the width and length of each piece and record the measurements on the loading papers. Your supervisor will make the necessary changes in the computer.

Variables that must be considered when loading a trailer.

- Load stability.
- Unloading sequence
- Customer's method of unloading
- Weight distribution over axles
- Protection of delicate products and surface finishes
- Product mix
- Adequate blocking material to insure that any item can be unloaded without damage to other material.

Look at the loading papers and answer the following.

1. Is this a one-stop or sequence load? **One-stop (1st and 2nd); sequence (3rd)** How do you know? **There aren't any numbers handwritten (1st and 2nd) on the center of the page. There are (3rd)**

2. What is the trailer number?

3. What do you do first? **Look over the loading papers, plan the way you want to load the trailer and visualize the loaded trailer in your mind's eye.**

4. What do you need to think about when getting the loading papers in order? **Load stability, unloading sequence, customer's method of unloading, weight distribution over axles, product mix and protection of delicate products and surface finishes.**

5. Any special instructions should be **followed as written.**

6. What is a RW and what should you do when you have one on your loading papers? **A "RE-WRITE" occurs when for some reason an order was not shipped complete or correct the first time. Make a special effort to insure that the order is shipped correctly. This could be the last chance to satisfy the customer.**

7. Loading instructions can be found in three different places on the loading papers. What three places are they found? **1) Internal Instructions block, 2) Customer Instructions block and 3) Line Item Description block.**

8. When "pull from stock and load" is in the description block it means that this item has not been **pre-pulled for you**.

9. Although most items are pre-pulled for you there are exceptions. What are the exceptions? **1) Stock size carbon plates, alloy plates, stainless plates, HR rounds and squares; 2) Stock size hot-rolled sheets; 3) All structurals in Bay 10 and Bay 23; 4) All 40' and longer structurals in Bay 4; 5) All expanded metal grating; 6) All welded tubing in Bay 3; and 7) Miscellaneous items marked "pull from stock and load".**

10. Some orders have a R/L in the length section and some are in the description block of the loading papers next to the feet measurement. R/L is the abbreviation for **random length**. What is required from you on this type of order. **Each piece should be measured and the measurements recorded on the loading papers.**

11. The trailer number is on **all** of your loading papers.

Instructor Notes	Activities	Materials	Time
	Set Induction Read "What went Wrong?" and discuss how this situation could be avoided.	Story: "What Went Wrong?"	5 - 10 minutes
	Guided Practice Guide learners through the problem solving steps on the board. 1) What is the problem?; 2) What are some possible solutions?; 3) What are the consequences of these solutions?; 4) What is the best solution? Have learners read the "Truck Story" and help you answer the problem solving questions.	Markerboard Kit Workbook "Truck Story"	10 - 15 minutes
	Applied Practice Have the learners read case studies and answer the questions for each one.	Workbook	20 - 25 minutes
	Closure Discuss answers as a whole group.		15 - 20 minutes

WHAT WENT WRONG?

This is a story of four people: Everybody, Somebody, Anybody and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry because it was Everybody's job. Everybody thought that Somebody would do it, but Nobody asked Anybody. It ended up that the job wasn't done and Everybody blamed Somebody when actually Nobody asked Anybody.

Source Unknown

Problem Solving Steps

1. State the problem.
2. State the possible solutions.
3. Implement the most feasible solution.
4. Evaluate the effectiveness of the solution.

TRUCK STORY

Ron, a driver for the Zig Zag Trucking Company was headed for ABC Company with a delivery. The load was to be delivered by 9:00 a.m. and as he headed down the interstate, in the distance he could see that traffic was backed-up. Ron continued on thinking it was just your typical bad traffic day. When he came near the traffic jam he could see that traffic was being re-routed because of road construction. Ron was not familiar with this part of town. As he approached the overpass Ron realized that his rig was 13'6" and the clearance for the overpass was only 13'5".

1. How could this situation be avoided?

2. What is the problem?

3. What are some possible solutions?

4. What are the consequences of these solutions?

5. What do you think is the best solution and why?

CASE STUDY #1

You have an order for 5 pieces of A-36 HR STD I BEAM 4 x 9.5 x 40' 0". Your loading papers say "Pull from stock and load". You find the material in Bay 5-S03 and have the crane operator load it on the truck. When the order reaches the customer, they measure the beams and find that they are only 30 feet long.

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

CASE STUDY #2

Your supervisor has given you the loading papers you will be loading from today. You get your papers in order and find your trailer is still loaded with material being delivered from another warehouse. You get with your supervisor and he assigns you another trailer. You proceed to locate your materials and have them loaded on the trailer as you locate them in each bay. At the end of your shift you turn in your paperwork and go home. The load is sent out without any changes being made on the loading papers.

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

Read the Corporate Quality Policy and the Mission Statement and answer the questions.

CORPORATE QUALITY POLICY

It is our policy to supply products and services conforming to the specifications and expectations of our customers, both internal and external.

This is accomplished by philosophies and actions which:

1. Emphasize quality in everything we do.
2. Commit to the process of company-wide continuous improvement as we strive for defect-free products and services.
3. Provide training to employees at all levels and support the philosophy of employee involvement and contribution.
4. Assure that satisfied customers are the focus of everything we do regarding quality.
5. Assure that quality is a part of all sourcing decisions.

OUR MISSION

To provide the best possible value to our customers.
To maintain the highest ethical standards with each of our customers, suppliers, employees and communities.
To achieve superior financial performance and long-term growth.

OUR KEY STRATEGIES

Operational Excellance: We will provide superior value to our customers by consistently achieving extraordinary levels of quality, service and convenience; by minimizing cost at every stage of the distribution channel; and by dramatically improving the speed and reliability of our key business processes.

Customer Commitment: We will listen to our customers and respond to their needs rapidly and effectively. For those customers with exceptionally complex requirements, we will communicate in-depth across company and departmental boundaries, combining our skills with theirs to reduce their total costs and enhance their profitability.

Entreprenurial Action: We will seek opportunities to apply our strengths within our existing markets and beyond. We will take intelligent risks, and be willing to change our course, and always strive to be the best.

1. Why is it important to provide superior quality and value to our customers? **Customers will buy from the company that offers the best quality at the most economical price. they do not have to buy from O'Neal steel.**

2. Why is it necessary to provide training to employees at all levels? **Training is necessary to keep up with advancements in technology and to satisfy the requirements of ISO 9000.**

3. The corporate quality policy states: "it is our policy to supply products and services conforming to the specifications and expectations of our customers, both internal and external."what does it mean when we say "internal customer"? **An internal customer is anyone within the company that uses any material or information that we handle.**

4. What are four actions that can be taken to demonstrate our customer commitment? **(1) Listen to our customers, (2) Respond to their needs, (3) Communicate in-depth to solve complex problems, and (4) Combine our skills with theirs to reduce their costs and enhance their profitability.**

Instructor Notes	Activities	Materials	Time
	Set Induction Have items and a grocery bag on the table. Have learners look at the items to see if it makes any difference in what order the items are placed in the bag.	Grocery bag, 1 egg carton, 2 large cans, Sponge cake	5 - 10 minutes
	Guided Practice Discuss the importance of proper loading. Have learners assist you in determining the proper loading sequence.		15 - 20 minutes
	Applied Practice Have learners complete the exercises in their workbook.	Workbook	20 - 25 minutes
	Closure Have learner tell what they learned in this lesson.		

LOADING TIPS

Regardless of the type of load, all trailers must be loaded with the same basic objectives.

1. Blocking should be placed beneath all items to facilitate unloading. Skidded items should have blocking also. Use an adequate amount of support blocks of the proper length to eliminate material sag.
2. If you know you are not going to have a full load, the items should be loaded on the center of the trailer.
3. Be sure all items are restrained.
4. Place standards on the trailer.
5. Follow the necessary procedures for protecting delicate, easily damaged material; such as, aluminum, stainless, brass, etc from harder, heavier or rougher material.
6. Blocking on sheets and plates should run parallel with the longest dimensions of the sheets or plates unless they are to be forklift unloaded.
7. Standards and tie-down assemblies should restrain material from movement.
8. Remember, someone has to unload this trailer. Load all trailers as if you were going to haul and unload it yourself.
9. Loaded such that material destined for one stop, destination or customer can be off loaded without disturbing other material.
10. Loaded such that each item can be readily identified by the driver. (Adequately tagged or marked)
11. Loaded such that the truck is legal, weight properly distributed over the available axles, material touching the head board where required, overhang within allowable limits and all materials located where they can be secured (restrained during transport from falling off trailer).

Pictures of incorrectly loaded trailers would be placed here.

Look at each trailer and determine what is wrong.

Note: There may be more than one thing wrong with each trailer.

1. Some material is not chained or restrained to prevent sliding. Tie-down assemblies must be exactly over the support blocks. There are no standards down the sides of the trailer.

2. Drums should be chained. More support blocks are required to prevent material sag. Rear block should be all the way to the rear. Tie-down assemblies must be over the support blocks.

3. Material should be banded together into several lifts. Lack of support blocking beneath load and between lifts means our customer will find this material difficult to unload.

4. Front lift should have two tie-down assemblies...one over each support block. All tie-down assemblies must be over support blocks. One lift of material is not chained or restrained to prevent sliding.

5. There should be no space between these beam stacks. The low stacks should be on each side with the high stack in the middle. It would be better if all stacks were the same height. Tie-down assemblies must be over the support blocks. Standards should be longer.

6. Material beneath broken 4 x 4's may be damaged when beams fall. Some material is not chained or restrained in any way. Load should always be tied down exactly over the support blocks. Load should be placed against the bulkhead when possible. There are no standards down the sides of the trailer.

7. Some material is not chained or restrained in any way. Tie-down assemblies should always be over the support blocks. Load should be against the bulkhead.

8. Load should be against the bulkhead. Poor blocking allows bottom stack of sheets to sag in the center. There are no standards down the sides of the trailer.

9. There is not enough blocking and blocking is poorly placed. Tie-down assemblies should be exactly over the support blocks. There are no standards down the sides of the trailer.

10. Blocking is good, but tie-down assemblies must be exactly over the support blocks. Aluminum material will require blocking on top of the uppermost stack to protect it from chain damage. It is preferred that support blocks run parallel with the length of the sheets, unless they are to be forklift unloaded.

1. You have the following items to load on the trailer. What is the best way to load this material? Remember: You may not load the material the same way someone else would. That does not necessarily mean either way is wrong.

   3 - 96" plates 3/4"
   12 - I Beams 60'
   1 - skid aluminum 30 pieces 090 48" x 10'

2. There is an item on your trailer when you receive it. The item has a green dot on it. What does that green dot mean? **Return to inventory**

3. What do you do with the material in question #2? **Off load it in the bay where it is stocked.**

Instructor Notes	Activities	Materials	Time
	Set Induction Have the following written on the markerboard when learners come to class: "We all make mistakes, that's why pencils have erasers. But, if the eraser wears out long before the pencil, you might be overdoing it." Discuss the humor and seriousness of the quote.	Markerboard Kit	5 - 10 minutes
	Guided Practice Have learners help you list the type of errors that occur in loading. Discuss each type of error. (i.e. What each means.)	Markerboard Kit	15 - 20 minutes
	Applied Practice Have learners complete the exercise in their workbook.	Workbook	15 - 20 minutes
	Closure Discuss the exercise.	Workbook	10 - 15 minutes

There are eight errors that are reported by number of occurrences for each district. The eight errors are as follows:

1. Not on truck
2. Wrong size or description
3. Damaged
4. Short on count
5. Instructions not followed
6. Over on count
7. No paperwork
8. Poor tolerance control

Write some reasons for each error occurring and state some possible solutions for each type of error.

1. Not on truck

2. Wrong size or description

3. Damaged

4. Short on count

5. Instructions not followed

6. Over on count

7. No paperwork

8. Poor tolerance control

THE COST OF ERRORS

There is a cumulative record of loading errors compiled by the Operations Manager and the Warehouse Superintendant. The cumulative record is used as an aid in improving customer service. It also provides the company with a system for monitoring and comparing errors made by all loaders. By monitoring and comparing errors we can work toward reducing them. Errors are costly to the company and to you.

1. What are some costs for errors?
   The cost of the material being shipped initially.
   The cost of retrieving the material that was shipped incorrectly.
   The cost of replacing the material or reworking it.
   The cost of reshipping the material.
   Accept any reasonable answer.

2. Everyone makes mistakes. Think of an error you have made and explain what you are doing to prevent the error from occurring again.
   Accept any reasonable answer.

Instructor Notes	Activities	Materials	Time
	Set Induction Have the learners divide into groups of 2 or 3. One person will direct the other person or persons in the group to draw the object on the card that group has chosen. They must first direct the others by using their hands only. Allow 2 minutes for this and then have them turn the paper over and verbally direct the ones drawing. How close were the drawings to the actual object? Would the task have been easier to complete if you had the picture and some written instructions? Cutting cards and customer drawings are used for that purpose. Introduce Vocabulary	Cards, Workbook	6 - 8 minutes, 10 minutes
	Guided Practice Discuss the sections of the cutting card. Explain how to locate information on the cutting card and how to record quality inspections.	Transparency, Workbook	20 minutes
	Applied Practice Have learners complete the workbook exercises.	Workbook	15 minutes
	Closure Check the exercises and discuss any problems.		10 minutes

JOB VOCABULARY

Blueprint - A detailed drawing which provides information as to what the object will look like when it is complete.

Visualize - To get a mental picture of the shape and size of an object by looking at a blueprint or drawing.

Interpret - To look at a drawing and understand what you see on paper.

Standard Size - Dimensions such as .250, .375, .500, 1/8, 3/8 , 3/16, 1/4 etc. Are considered standard.

Tolerance - The amount of variation, from the desired or specified size, that is permitted.

Scale - The relationship of the size of the blueprint to the size of the actual object. Remember that the dimensions are always the exact size no matter what the scale.

Detail Drawing - A drawing of a single part that provides all the necessary information to produce that part.

Plan View - The view of an object from the top.

Radius - The distance from the center of the circle to the outer edge.

Diameter - The distance across the center of the circle.

Dimensions - The size of an object represented in numbers.

JOB VOCABULARY

Cutting Card - A card used when an order is placed, to describe in detail what the customer has ordered, how it should be burned and any special instructions.

Quantity (QTY) - The amount or number of pieces the customer ordered.

Unit - A standard of quantity (i.e. pieces, pounds, feet, etc.).

Item - The term used to identify each unique part ordered by the customer.

Item # - A unique numerical designation for each stock size item in our inventory.

Drops - The useable material left after parts are burned.

Kerf - The channel or slit left by a burning tip.

Tumbleblast or Spinblast - The process for the removal of rough edges or mill scale by placing the parts in a rotating drum that contains dry media (tiny metallic beads) that is propelled at the parts.

Grain Direction - The direction the material was rolled when being made generally the length of the material.

JOB CODES AND ABBREVIATIONS

PN - part number.

DWG - Drawing

PCS - pieces

A-36 - One of the most widely used carbon steels. It can be welded, formed or machined.

HR - Hot rolled. Produced on rolling mills that leave surface imperfections such as, scale, seams, flat spots, ridges, etc.

Theor. Wt. - Theoretical weight - The estimated weight based on standards.

Scale Wt. - The actual weight as determined by a scale.

Cont - Container, includes bundles, skids, pallets, buckets, drums, pails, boxes, etc.

Tol - Tolerance.

Ø - Diameter.

R - Radius.

Copies of Cutting Cards would be placed here.

Locate and interpret the following. Make sure you are using the correct cutting card for each question. The cutting cards are labeled A, B or C at the top.

Cutting Card A

1. This order is for ____2____ pieces.
2. The order is to be burned from **A-36 HR Plate 3/8** to be found in **Bay 21 - 654**.
3. This is O'Neal order number **WH 14306** and the customer is **Redi-mix.**
4. What is the description for this part?
   A-36 HR Plate 3/8"
   Burn per drawing. The plate does not need to be deslagged. Burn with oxy-fuel including 15" hole.
5. The theoretical weight for these parts is **2,155 pounds**.

Cutting Card B

6. Locate the customer instructions. What are they? **2,000 pound maximum lifts, must be tarped, forklift unloading, put in NACCO container or skid.**
7. The part number should be written on **a tag attached to the container** and **on the top pieces.**

Cutting Card B - con't

8. In the description there is a special note. What does it say? **Do not put different parts in the same container.**

9. Are the theoretical weight and the ship weight the same? If not, what is the difference? **No. 32 pounds**

10. What is the drawing number for this order? **388943**

Cutting Card C

11. What is the order date? **04/19/95**

12. The item number is **0449901**.

13. The customer has instructions and a tolerance for this order. What are they? **The plate cannot have surface defects and the tolerance is ± 1/8".**

14. When the location box on the cutting card has something printed in it, what does that mean? **The location box tells you where the designated size stock plate is stored and where any drops that may be available are stored.**

15. The customer is **ALCO Machine Company** and the promise date is **04/28/95**.

A copy of an inspection record would be placed here.

How to record measurements on the parts inspection record.

1. Look at the measurement on the customer drawing and record the item #, part or drawing # and the tolerance.

2. Measure the part and record under #1. Record the second part measured and so on under #2, #3, etc.

3. Be sure parts are within tolerance.

Look at the parts inspection record to answer the following:

1. What are the measurements recorded for item #93415-13116 under #3,inspected by CH? **64.8**

2. Are all of the measurements within tolerance? If not which are out of tolerance? **No. 65.72 and 65.58**

3. The measurements for the part are 65.0 ± .5 and 173.7 ± 1.0. What is the largest each measurement can be to remain in tolerance? **65.5 and 174.7** What is the smallest each measurement can be to remain in tolerance? **64.5 and 172.7**

4. Look at the inspection record and determine if everything is recorded properly. If something is not recorded correctly state what the problem is and how it should be corrected.

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners complete the crossword puzzle.	Workbook	5 - 10 minutes
	Guided Practice Guide learners in locating information on the customer drawing. Ask questions and have learners help you find the information on the drawing. Explain that blueprints and customer drawings help them visualize how the parts will look when they are finished.	Transparency, Overhead Projector, Workbook	20 minutes
	Applied Practice Have the learners complete the exercises in their workbook	Workbook	15 minutes
	Closure Discuss the importance of cutting cards, programmer drawings and customer drawings. Check the crossword puzzle.		15 minutes

A customer drawing would be placed here.

Redi Mix, Inc.

Make 2 pieces identical with measurements as follows:

1. Take 1plate of 3/8" steel 168 9/16" by 53". Begin at point (A) and measure 149" toward point (Z). This is point (C). At point (C) draw line to point (D) and cut.

2. Begin at point (D) and measure 149" toward point (X). This is point (B). At point (B) draw a line to point (A) and cut.
   Line A-B and line C-D will be parallel.
   Length of A to B should be 56 1/2".
   Length of C to D should be 56 1/2".

3. Begin at point (A) measure toward point (C) 83 1/2". This is point (N). Make right angle at point (N) and measure toward point (O) 34 1/2" to point (P). Cut 15" diameter hole at point (P). With point (P) being the center of 15" hole.

Use the drawing on the previous page to answer the following.

1. What are the outside dimensions of this part?
   149" x 56 1/2"

2. Can we determine the dimensions by looking at the drawing? If not, how do we know the dimensions for this part.
   No, look at the written instructions.

3. This part has a hole to be burned in it. How could we determine the diameter of the hole without the written instructions at the top of the page?
   The drawing gives the width straight across as 53". It also shows the hole in the part with 27" on one side and 11" on the other side of the hole. Add the 27" to the 11" and you get 38". Then subtract the 38" from the 53" and you get the diameter of the hole which is 15"

4. What other information can we determine by looking at the drawing and reading the instructions?
   We need a steel plate 168 9/16" x 53". The center of the hole should be 83 1/2" from point A and 65 1/2" from point C. The width of the finished part measured from point A to B and from part C to D should be 56 1/2". The quantity we need to burn is 2 pieces. The drawing is not to scale. The drawing is a detail drawing because it only shows a single part and how that part looks. The drawing is shown from the top only or from plan view.

Instructor Notes	Activities	Materials	Time
	Set Induction Read "What went Wrong?" and discuss how this situation could be avoided.	Story: "What Went Wrong?"	5 - 10 minutes
	Guided Practice Show video and guide learners through the problem solving steps on the board.	Video: Solving Communication Problems	20 minutes
	1. What is the problem?		
	2. What are some possible solutions?	Markerboard Kit	
	3. What are the consequences of these solutions?		
	4. What is the best solution?		
	Have learners read the "Truck Story" and help you answer the problem solving questions.	Workbook "Truck Story"	
	Applied Practice Have the learners read Case Studies #1, 2, and 3 and answer the questions for each one.	Workbook	20 minutes
	Closure Discuss answers as a whole group.		5 minutes

WHAT WENT WRONG?

This is a story of four people: Everybody, Somebody, Anybody and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry because it was Everybody's job. Everybody thought that Somebody would do it, but Nobody asked Anybody. It ended up that the job wasn't done and Everybody blamed Somebody when actually Nobody asked Anybody.

Source Unknown

Problem Solving Steps

1. State the problem.
2. State the possible solutions.
3. Implement the most feasible solution.
4. Evaluate the effectiveness of the solution.

TRUCK STORY

Ron, a driver for the Zig Zag Trucking Company was headed for ABC Company with a delivery. The load was to be delivered by 9:00 a.m. and as he headed down the interstate, in the distance he could see that traffic was backed-up. Ron continued on thinking it was just your typical bad traffic day. When he came near the traffic jam he could see that traffic was being re-routed because of road construction. Ron was not familiar with this part of town. As he approached the overpass Ron realized that his rig was 13'6" and the clearance for the overpass was only 13'5".

1. How could this situation be avoided?

2. What is the problem?

3. What are some possible solutions?

4. What are the consequences of these solutions?

5. What do you think is the best solution and why?

CASE STUDY #1

The material handler selects a plate for the burner out of the 3/4" bin. The burner enters his program and burns 300 parts of a 400 part order. The burner checks his work before he burns the next 100 parts. He finds that the material is 1/2".

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

CASE STUDY #2

You are a burner. When you get to work you have three orders at your machine. You check the machine and the plate and start to burn the first order. The order is completed around 1:00 a.m. and you look at the paperwork for your next order.

The dimensions on the cutting card and the customer drawing differ. The programmer is not here at this time of the morning and your supervisor is in another part of the warehouse. What would you do?

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

Case Study #3

The paperwork Charlie needed to do his job was on his table when he came in. He needed to finish an order started by Jerry on the shift prior to his shift. Charlie checked the machine and the plate on the cutting table. Everything checked out so Charlie started burning the remainder of the order. He finished the order around 2:00 a.m. and looked at the next order.

The information on the next order was exactly the same as the order that he just finished. He checked the machine and the plate that had been brought to his cutting table and started to burn the parts. His supervisor came by at 3:00 a.m. and asked "Haven't you finished the order Jerry started?" When Charlie told his supervisor he had finished that order, his supervisor looked puzzled. The supervisor asked, "Do you have the special order on your burning table now?" Charlie had no idea what his supervisor was talking about. He had not seen any notes about a special order. Perhaps someone had left him a WIZ message, but he was running late getting to work and didn't want to get caught so he skipped checking his messages.

Charlie's supervisor knew he was burning the order that had been canceled. He didn't know that Charlie was late getting to work and had not checked his messages.

What is Charlie going to do now?

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

Instructor Notes	Activities	Materials	Time
	Set Induction Pass out copies of Can You Follow Directions. Place them face down and tell learners not to turn them over until you say start. Explain that they will have 2 minutes to read and complete the exercises. Use your watch to time the exercise.	Can You Follow Directions	5 minutes
	Guided Practice Discuss what was learned in the exercise. Why is it important to have all the necessary information before you begin something? Show the example on the overhead projector and guide learners in searching to determine if they have all the necessary information to burn the part.	Overhead projector	10 - 15 minutes
	Applied Practice Have learners work in small groups to determine if they have all the necessary information and if not, they should problem solve to determine what should be done.	Workbook	
	Closure Discuss as a whole group.		

Can You Follow Directions?

1. Read everything carefully before you do anything.
2. Put your name in the upper right-hand corner of this paper.
3. Circle the word "NAME" in sentence two.
4. Draw five small squares in the upper left-hand corner.
5. Put and "X" in each square.
6. Put a circle around each square.
7. Sign your name under the title of this paper.
8. After the title, write "YES, YES, YES,".
9. Put a circle completely around sentence number seven.
10. Put an "X" in the lower left-hand corner of this paper.
11. Draw a triangle around the "X" you just put down.
12. On the back of this paper, multiply 703 by 66.
13. Draw a rectangle around the word five in sentence four.
14. Loudly call out your first name when you get this far.
15. If you think you have followed directions carefully to this point, call out "I HAVE IT".
16. On the reverse side of this paper, add 8950 and 9805.
17. Put a circle around your answer.
18. In your normal speaking voice, count from ten to one backwards.
19. Punch three small holes in the top of this paper with your pencil.
20. If you are the first person to reach this point, LOUDLY CALL out "I AM THE FIRST PERSON TO THIS POINT, AND I AM THE LEADER IN FOLLOWING DIRECTIONS".
21. Underline all even numbers on the left side of this paper.
22. Put a square around each written-out number on this page.
23. Loudly call out "I AM NEARLY FINISHED; I HAVE FOLLOWED DIRECTIONS".
24. Now that you have finished reading everything carefully, do only sentence one and two.

Source Unknown

A customer drawing would be placed here.

Look at the drawing to determine if you have all the necessary information to burn the part. What do you need to know?

1.

2.

3. The part you are burning measures 173.7 mm x 65 mm, the 21mm diameter is to be punched, the tolerance is ± .5. Do you have enough information to burn the part? If not, what do you need? **No. Need to see customer drawing for shape and other dimensions.**

4. The cutting card says use A-36 HR Plate 3/8", burn per drawing, oxy-fuel burn including 15" hole. When you look at the customer drawing it says use 1/2" plate. Your supervisor has told you the customer is always right, so you burn the parts using 1/2" plate. The parts have to be scrapped costing the company thousands of dollars. What is the problem? **The part was burned from the wrong material.** How could this have been avoided? **Check with supervisor and/or programmer when things differ.** Who is responsible for this problem? **The person burning it is responsible.** What affect does this have on other employees? **Raises and benefits come from profit. Mistakes that cost the company money take away from these areas.**

Instructor Notes	Activities	Materials	Time
	Set Induction Read the story and ask each learner to decide if there was a gain, lose or break even?	Story	5 minutes
	Guided Practice Have the learners work through each word problem using addition, subtraction, multiplication and division of whole numbers. Review all answer with the learners	Workbook	15 - 20 minutes
	Applied Practice Have learners complete the addition problems in their workbook. Discuss each answer with the learners.	Workbook	15 - 20 minutes
	Closure Discuss lesson to determine if additional help is necessary.		2 minutes

Guided Practice

1. The customer has ordered 50 cold rolled plates 48" x 10'. There are 25 in one location and 27 in another location. How many plates have you located in all? **52 plates**

2. A load of beams is delivered. According to the bill of lading there should be 42 on the truck. When you finish unloading you have only counted 37 beams. How many are missing? **5 beams**

3. One beam weighs 200 pounds. How much would 22 weigh? **4400 pounds**

4. The total weight of an order of plate is 20,000 pounds. The plate should be on 3,000 pound skids. How many skids will there be total? **7 skids**

Solve the following problems.

1. 45 + 31 + 27 = **103**

2. 215 + 17 + 35 = **267**

3. 115 - 20 = **95**

4. 326 - 35 = **291**

5. 45 x 3 = **135**

6. 70 x 12 = **840**

7. 105 ÷ 5 = **21**

8. 225 ÷ 10 = **22.5**

9. The locator card indicates that the customer ordered 225 pieces of bar channel. Each bundle has 50 pieces. How many bundles will be needed to fill this order? **5 bundles**

10. You have received a rail car with 80 beams all the same size. You are instructed to lift no more that 6 beams at one time. How many moves will it take to get all the beams out of the car? **14 moves**

11. You have an order for 100 pieces of hot rolled plate. The order weighs 10,000 pounds. The customer has instructed us not to ship more than 2,000 pounds per skids. How many skids will be needed for this order? **5 skids**

12. You have received an order for 25 pieces of tubing. When you start pulling the material there are only 21 pieces. How many pieces are needed to fill the order? **4 pieces**

13. One 15 @ 30 beam 30' long weighs 900 pounds. How many beams will it take for a 5400 pound order? **6 beams**

Instructor Notes	Activities	Materials	Time
	Set Induction Have learners record the direction for painting a wall. Ask for 2 or 3 volunteers to read their directions. Did they include all the necessary steps? (e.g., preparing the wall, mixing the paint, taking the lid off the can, etc.) Discuss the importance of knowing and following correct job procedures.	Paper	10 - 15 minutes
	Guided Practice Have learners assist you in making a list of the steps that are necessary to complete the job of material handler. Discuss the material handling procedures.	Markerboard Kit Workbook	15 - 20 minutes
	Applied Practice Read through the ISO material handling procedures and complete the workbook exercises.	Workbook	20 minutes
	Closure Discuss the workbook exercises.		5 - 10 minutes

Material Handler Work Instructions

Receiving

A. Visually inspect material for size and color code.

B. Inquire "STK" screen for assigned location.

C. Place material in assigned location or in overflow area when necessary.

D. Call receiving co-ordinator if there are discrepancies.

Pulling for Processing

A. Review cutting card.

B. Locate stock or drop.

C. Record heat number.

D. Forward material to machine operator.

After Processing is Complete

E. Drops - Visually verify that the heat number is on material and that it has been color coded where applicable. Return to designated stocking location.

F. Finished Goods - Visually verify heat number is on material, that it has been color coded where applicable and that it is packaged per QAP 15. Place in designated laydown area.

* QAP 15 is in the Shipping and Receiving section.

Prepulling for Loaders

A. Review locator card.

B. Record *heat number for pull and load items and Bay 11 items except for products that have no such number (ex. Brass, Grating). For pull and load items that require matching heat numbers, visually verify heat number in imaging system or verbally verify with test report clerk.

C. Random lengths must be recorded.

D. Process per locator card.

E. Forward to secondary operation, if applicable.

F. Package per QAP 15.

G. Place in designated laydown area.

H. Initial, date and circle quantity on locator card and forward to production control at least every two hours.

Loading

A. Review loading paper.

B. Locate material.

C. Record *heat number for pull and load items and Bay 11 items except for products that have no such number (ex. Brass, Grating). For pull and load items that require matching heat number, visually verify heat number in imaging system or verbally verify with test report clerk.

D. Random lengths must be recorded.

* QAP 15 is in the Shipping and Receiving section.

E. Package per QAP 15

F. Load material on trailer.

G. Initial, date and circle quantity loaded on loading paper after the material is on the trailer.

H. "Bill Count" should be called in to the loading foreman or his designee.

I. Quantity changes must be called in to the loading foreman or his designee.

Note: The loading foreman or his designee is responsible for having another shipping paper printed when any changes have been made.

J. Forward loading paper to shipping office.

*Record the heat number in the description block for the appropriate line item.

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* QAP 15 is in the Shipping and Receiving section.

Answer the following questions.

1. When receiving material you should inquire the "STK" screen. Why? **The STK screen will show the assigned location for the material.**

2. On pull and load items the **heat number** must be recorded.

3. After material has been processed, what should be done to the material? **Visually verify that the heat number is on material, that it has been color coded where applicable, and that it is packaged per QAP 15. Place in designated laydown area.**

4. When you are finished with a locator card what should you do? **Initial, date and circle the quantity on the card and forward to Production Control.**

5. When material is in random lengths the **measurements must be recorded.**

Instructor Notes	Activities	Materials	Time
	Set Induction Have a book, one gift box, wrapping paper, tape, bow, ribbon or string and a card. Have learners guide you through the process for wrapping a present. (Ex. Place book in box, tape box, etc.) Discuss how wrapping the present is similar to wrapping material for shipment.	Book, box, wrapping paper, tape, bow, ribbon/string, and card.	10 - 15 minutes
	Guided Practice Guide learner through the packaging procedures for their area. Discuss each one.	Markerboard Kit Workbook	15 - 20 minutes
	Applied Practice Answer questions in workbook.	Workbook	20 minutes
	Closure Discuss the workbook exercises.		5 - 10 minutes

Packaging Procedures

Cold Rolled Bars

1. Bundles must not exceed 10,000 pounds unless noted on the order.
2. The size of the bundle may be determined by the damage potential while in transit.
3. The content of all bundles must be identified with a tag or packing list.
4. The tag or packing list must be securely affixed to the bundle.
5. All markings must be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight.
6. This material, when pulled from stock for shipment, must be secured on each end. For small bundles, material may be taped together on each end and with nylon reinforcement tape. Larger bundles should be secured with bands on each end.
7. If processing is required and material is small enough, it may be placed in a container which must be identified with legible markings.
8. Certain types of cold rolled material such as turned, ground and polished must be protected in a cardboard tube and where practical, handled with nylon straps. If original wrappings are damaged, they must be repaired and the material checked for rust before shipping.
9. All cold rolled bars must be identified by color code before shipment.
10. This material must be oiled from time to time while in stock to prevent rust.
11. For order where there are many line items of 2 or 3 pieces, each of these items may be secured together and then placed in a master bundle.
12. Care must be taken not to make the master bundle too large so as to cause damage in loading.

Packaging Procedures

Aluminum Shapes, Flats, Pipe and Rounds

1. This material, when pulled from stock for shipment, must be banded on each end, nylon tape small bundles and wrapped with logo moisture proof paper or placed in a plastic sleeve. Protectors must be used under the bands.
2. All material must be identified with the proper color code.
3. The size of the bundle may be determined by the damage potential while in transit.
4. The contents of all bundles must be identified with a tag or packing list.
5. The tag or packing list must be securely affixed to the bundle.
6. All markings must be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight.
7. Material should be handled with nylon straps.
8. Handle carefully to prevent bending.

Packaging Procedures

Hot Rolled Flat Bars, Bar Channels, Bar Angles, Rounds and Squares

1. Unless noted, bundles should not exceed 10,000 pounds.
2. The size of the bundle may be determined by the damage potential while in transit.
3. The content of all bundles must be identified with a tag or packing list.
4. The tag or packing list must be securely affixed to the bundle.
5. All markings should be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight.
6. This material, when pulled from stock for shipment, must be secured on each end. For small bundles, material may be taped together on each end with nylon reinforced tape. Larger bundles should be secured with bands on each end.
7. Hot rolled rounds and squares under .500" band or tape 3 times, each end and center.
8. Hot rolled flats under .250" thick , band or tape 3 times, each end and center.
9. Saw cut material, depending on size and customer requirement, must be banded, in a container or palletized and secured for shipment.
10. All material must be color coded when applicable.

Copies of loading tags would be placed here.

Different Types of Tags

Each one of these tags may be used when packaging material.

This tag may be torn from the locator card. The information from the locator card has been recorded on the tag. The heat number, number of bundles and weight must be filled in by the material handler. Before tagging the material, make certain all information is correct.

This tag may be used for tagging material for shipment. All information must be written on each line.

Hook-ups

Throughout the plant there are several different lifting devices. The types of devices used in Bays 1, 2, 3, and 3a are chains and nylon straps. Chains and nylon straps perform the same job but nylon straps should be used when moving delicate material. (Ex. Turned, ground and polished or Aluminum)

Listed below are the hook-up procedures for long shapes.

Long Shapes

Hook Up

1. Choose the sling of ample capacity and proper type for the load.
2. Work from the end of a bundle. Don't get caught in a pinch point.
3. Keep your hands clear of material and slings or chains once the load is lifted.
4. Hook the material, not the bands, wire, etc. Move the sling in at least six inches from the end of the bundle.
5. Never overload the crane or sling.
6. Make sure the load is secure and balanced.
7. Move away from the material before signaling for a free lift.
8. Use a spreader beam to pick up limber material.

Movement with the Crane

1. Avoid walking under a crane load. Under no circumstances are you to ride on the hook or load. Prepare an area to receive the material.

Unloading

1. Keep your hands, feet and loose clothing out of harms way while you are steadying the load to be put down.
2. Use hard wood blocks to allow room for unhooking and rehooking.
3. On large bundles, keep the chains around the bundle while you break the bands.
4. For smaller bundles break center bands first. Then stand at the end of the bundle and break the outside bands.
5. Lower the bundle and stand away.
6. Remove chains and re-hook empty sling for crane travel.

Copies of the loading equipment would be placed here.

Sling Chains

Nylon Straps

Answer the following questions.

1. The content of all bundles must be **identified with a tag or packing list.**

2. All cold rolled bars must be **identified by color code before shipment.**

3. When aluminum shapes, flats, pipe and rounds are pulled from stock for shipment, how should the material be packaged?
The material must be banded on each end, nylon tape small bundles and wrapped with logo moisture proof paper or placed in a plastic sleeve. Protectors must be used under the bands.

4. Why should aluminum material be handled carefully? **To prevent bending, denting, scratching or getting greasy.**

5. The order to be pulled is turned, ground and polished material. Why should nylon straps be used? **This material would be damaged if chains were used.**

6. When hooking-up material you should hook the **material**, not the **bands**.

Packaging Procedures

Structural Shapes, Hollow Structurals, Tubing and Pipe

1. Structural shapes, due to their nature, are seldom protected from the weather while in transit.
2. Sometimes hollow structural tubing must be protected with a tarpaulin. If so, this information must be noted on the loading paper.
3. Hollow structural tubing and pipe must be banded on each end.
4. Structural shapes and angles will be nested or banded for shipment.
5. Spilt tees are banded as needed.
6. Saw cut material must be banded in an appropriate sized bundle and secured for shipment.
7. The content of all bundles must be identified with a tag or packing list.
8. The tag or packing list must be securely affixed to the bundle.
9. All markings must be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight.
10. If weight per bundle is a problem, it must be noted on the loading paper, otherwise 10,000 pounds maximum.
11. All random length tubing and pipe must be tagged with total number of pieces and footage.
12. All material will be color coded with the appropriate color code.

Packaging Procedures

Hot Rolled Flat Bars, Bar Channels, Bar Angles, Rounds and Squares

1. Unless noted, bundles should not exceed 10,000 pounds.
2. The size of the bundle may be determined by the damage potential while in transit.
3. The content of all bundles must be identified with a tag or packing list.
4. The tag or packing list must be securely affixed to the bundle.
5. All markings should be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight.
6. This material, when pulled from stock for shipment, must be secured on each end. For small bundles, material may be taped together on each end with nylon reinforced tape. Larger bundles should be secured with bands on each end.
7. Hot rolled rounds and squares under .500" band or tape 3 times, each end and center.
8. Hot rolled flats under .250" thick , band or tape 3 times, each end and center.
9. Saw cut material, depending on size and customer requirement, must be banded, in a container or palletized and secured for shipment.
10. All material must be color coded when applicable.

Copies of the loading equipment would be placed here.

Sling Chains

Clamps

Answer the following questions.

1. The content of all bundles must be **identified with a tag or packing list.**

2. All random length tubing and pipe must be **tagged with total number of pieces and footage.**

3. Saw cut material must be **banded.**

4. What is the procedure for packaging hot rolled rounds and squares under .500" and hot rolled flats under .250"? **Hot rolled rounds and squares should be banded or taped 3 times at each end and the center. Hot rolled flats should be banded or taped 3 times at each end and the center.**

5. How should random length tubing and pipe be tagged? **All random length tubing and pipe must be tagged with total number of pieces and footage.**

6. When hooking-up material you should hook the **material**, not the **bands**.

Packaging Procedures

Aluminum Plate

1. Before packaging, all saw cut aluminum plate must have saw chips removed from the material.
2. If material is placed on a pallet, layers must be separated with a "cush-pak", double faced cardboard.
3. Pallets must be wrapped in moisture proof, logo paper and secured with bands.
4. One piece orders must be protected with cardboard wrapping.
5. Edge protectors must be used when banding.
6. Each package must be identified with order number, type of material, number of pieces, number of bundles and color coded.

Packaging Procedures

Cold Rolled, Coated Sheet Products, Stainless Steel, and Aluminum

1. All material must be shipped on a wood skid and wrapped.
2. Maximum weight not to exceed 10,000 pounds, unless noted.
3. All material to be handled with a sheet lifter.
4. The procedures for wrapping a skid of material is as follows:
    a. Place sheet of double faced cardboard on the appropriate size wood skid.
    b. Place material on next, not to exceed 10,000 pounds.
    c. Place a sheet of double faced cardboard on top of the material.
    d. Wrap skid of material with logo moisture proof paper.
    e. Band with 2 bands longitudinal and one band transverse at the middle.
    f. Use edge protectors when banding.
    g. This procedure is subject to customer requirements.
5. The skid of material, after wrapping, must be identified as to product, quantity, size and order number. This is usually done with a black felt tip marker.
6. Coils, shipped as full coils, sometimes are placed on a pallet with the "eye to sky". Sometimes it may be loaded with a "C" hook and the eye will be horizontal.
7. Customer instructions are the deciding factor in loading coils.
8. Trailer roof material is very sensitive to handling damage as well as weather damage. This material must be in a fibre drum then wrapped with logo paper.

Packaging Procedures

Bar Grating, Grate-X, Expanded Metal and Grip Strut

1. Bar Grating and Grip Strut in stock sizes shall be banded around each end.
2. Stair Treads must be in a bundle not to exceed 14 treads high, nor 42 total treads per bundle and secured on both ends with double bands.
3. Fabricated grating should be in an appropriate sized bundle and secured for shipment.
4. Grate-X Grating and Expanded Metal products must be wired together for shipment.
5. Over 5 pieces of Expanded Metal must be on a wood skid.
6. All bundles must be identified with tags showing the following:
    a. order number
    b. number of pieces
    c. number of bundles
    d. product identity
7. All stock sized material must be color coded if applicable.

Hook-ups

Throughout the plant there are several different lifting devices. The types of devices used in Bays 6, 6a, 7, 8 and 9 are sheet lifters, clamps, vacuum lifts and chains.

Listed below are the hook-up procedures for plates and sheets.

Plate and Sheets

Hook Up

Sling Chains

1. Don't overload a chain, it can stretch or break.
2. Put a chain at each end of the load at least six inches from the end. Never try to balance a load with one chain.
3. The plate should be supported by the chain as though the chain were a basket.
4. Never point load a chain hook.

Lifting Clamps

1. Do not lift more than two plates with a clamp at a time.
2. Make sure the load is balanced.
3. Use the proper size clamp.

Plate Hooks

1. Make sure the hook is completely on the load.
2. After you have put the hook in place, move away from it.
3. Be sure that the load is balanced.
4. Do not use hooks on very thin sheets.

Sheetlifters

1. Make sure the sheet lifter is properly loaded before making a lift.
2. Be sure that the load is balanced.

Movement with the Crane

1. Avoid walking under a crane load. Listen for warning devices.
2. Move the load gradually. Sudden stops and starts will cause the load to swing.
3. Lift the load high enough off the ground to clear all obstacles at the floor level before moving forward or backwards.
4. Make sure you have the proper clearance.

Copies of the loading equipment would be placed here.

Sheet Lifter

Clamps

Vacuum Lift

Chains

Answer the following questions.

1. If aluminum plate is placed on a pallet, the layers must be **separated with a "cush pak", double faced cardboard.**

2. Aluminum plate pallets must be **wrapped in logo paper** and secured with bands.

3. What is the procedure for wrapping a skid of cold rolled or stainless steel products?
Place sheet of double faced cardboard on the appropriate size wood skid.
Place material on next, not to exceed 10,000 pounds.
Place a sheet of double faced cardboard on top of the material.
Wrap skid of material with logo moisture proof paper.
Band with 2 bands longitudinal and one band transverse at the middle.
Use edge protectors when banding.
This procedure is subject to customer requirements.

4. What is the deciding factor in loading coils? **Customer instructions**

5. Grate-X Grating and Expanded Metal products must be **wired together for shipment.**

6. Over **5** pieces of Expanded Metal must be on a **wood skid.**

Packaging Procedures

Edge Conditioning Line Products

1. Customer requirements from this machine makes packaging procedure notes necessary.

2. If packaging instructions are not printed out, bundles will be approximately 5,000 lbs.

3. Bundles should be banded 3 times, each end and center.

4. Bundles can be square or round, unless specified otherwise.

5. Each bundle must be identified with a tag or packing list stating the following:

   a. order number
   b. size
   c. quantity
   d. type of grade of material
   e. number of bundles
   f. color code if applicable
   g. heat number

6. Stainless steel material must have scale weight on each bundle.

Packaging Procedures

Heavy Duty Coil Line Products

1. Processed coil material is shipped loose in 10,000 pound maximum bundles.
2. Processed hot rolled coil material is shipped unprotected.
3. Any special loading notes must be on the order at the time of processing.
4. Processed coil material is not square in the "as cut" condition. Notes of square and resquare must be on the order.
5. Orders must not exceed the legal load limit, approximately 40,000 pounds.
6. There is a charge for skidding and wrapping hot rolled material from coil. This service is available for customer orders only.
7. When material must be on a skid and/or wrapped, the order must make the statement.
8. Each bundle must be identified with order number, product size, description, number of pieces and number of bundles total.
9. Small cut material must be packaged in a safe, secure manner for hauling.
10. Small slit coils must be banded around OD and through ID, then banded to a pallet for shipment.
11. When the instructions state that shipment must not be wet, it is the shipping district's responsibility to keep this material dry until it is released to the carrier.
12. Blocking must extend past the full length or width of the sheet and plate material.
13. When a lift of sheet or plate material is placed on top of another lift, the blocking must be exactly over the blocking on the previous lift.

Packaging Procedures

Plate Burning and Heavy Shearing

1. All burned parts must be deslagged before packaging.
2. Small parts may be shipped in containers such as wood boxes, buckets or drums.
3. Sheared or burned parts may be shipped on a pallet.
4. All palletized material must be secured by banding for shipment.
5. The content of all bundles, containers or pallets must be identified with a tag or packing list.
6. The tag or packing list must be securely affixed to the bundle, container or pallet.
7. All markings must be legible and contain such information as order number, description of material, number of pieces, number of bundles and weight. These marking must state the heat number if the material is an alloy grade.
8. All material must be identified with the proper color code before shipment.

Copies of the loading equipment would be placed here.

Plate Clamps

Hooks

Vacuum Lift

Chains

Magnet

Answer the following questions.

1. The content of all bundles must be **identified with a tag or packing list.**

2. Stainless steel material must have the **scale weight on each bundle.**

3. All burned parts must be **deslagged** before packaging.

4. What is the blocking procedure when a lift of sheet or plate is place on top of each other? **The blocking must be exactly over the blocking on the previous lift and must extend past the full length or width of the material.**

5. What is the shipping procedure for small burned parts? **Small parts may be shipped in containers, such as wood boxes, buckets or drums.**

Instructor Notes	Activities	Materials	Time
	Set Induction Have the learners divide into groups of 2 or 3. One person will direct the other person or persons in the group to draw the object on the card that group has chosen. They must first direct the others by using their hands only. Allow 2 minutes for this and then have them turn the paper over and verbally direct the ones drawing. How close were the drawings to the actual object? Would the task have been easier to complete if you had the picture and some written instructions? Cutting cards and customer drawings are used for that purpose.	Cards, Workbook	6 - 8 minutes, 10 minutes
	Guided Practice Explain the areas of the locator cards and with the learners assistance go over each section of the locator.	Transparency Loading Paper	10 - 15 minutes
	Applied Practice Have learners complete the exercise in their workbook.	Workbook, Loading Papers	15 - 20 minutes
	Closure Go over each question with the learners.		15 - 20 minutes

Locator Cards

The **Pulled By** block is for the person pulling material to be prepared for loading to initial. The initials indicate the material has been pulled.

The number in the **LC (Locator Card)** block lets the material handler know how many locator cards have been printed for this order.

The **Salesperson** block is the salesperson who received the order from the customer and entered it into our order filling system.

Each order received from a customer is assigned an **Order Number**. The order number is a 7 digit number (Ex.WH55555). The letters indicate if the order is a Birmingham warehouse order (WH), another district order (B-), or warehouse transfer (WT). (*Greensboro is identified by the number 2.)

Internal Instructions are instructions for employees. It could indicate shuttle loads, Re-writes, customer or district needs. This is one way of communicating information about orders internally.

Est. Ship Wt. is the estimated shipping weight of an entire order.

Customer Instructions are instructions the customer has given the salesperson. Every customer has certain procedures they consider important for the material. These instructions are very important. Always read and follow these instructions thoroughly.

The **Qty** block indicates the number of pieces the customer has ordered of that particular line item.

The **Description** block describes the type of material and size that has been ordered. The part number (PN), tolerance information, material information and what size material the order should be cut from will appear.

The **Width (Inches.)** block is the width measurement of the material.

The **Length** block is the length measurement for material and is shown in feet and inches.

The **Shipping Wt.** is weight of the material or parts being shipped.

Each stock size item in our inventory is assigned a different **Item #** . Each number has 7 digits. The first two numbers indicate the type of material, ex. - Item # 0516701 - The 05 indicates that the material is Floor Plate or Sheet. The 16701 identifies a specific stock size of floor plate or sheet.

Res is the number of pieces of stock set aside to fill the order.

For non-processed material, the **Location** block informs the Material Handler and/or Operator which bay the material is in and what bin or floor location to find the material.

Some material is identified by a color coding system. If there is a color in the **Color Code** block, the material will have that color paint on the edges.

When the customer buys material that needs processing, a processing code will appear in the **Machine** block. This indicates what type of machine processing is required for the material. When looking for the material or parts to load on the trailer, look in the lay down area for that particular machine.

Theo. Wt (Theoretical Weight) is the weight of material before processing. This amount of weight determines the selling price. This weight is automatically calculated by the system.

There is not a designated block for the heat number. Remember to always record the heat number for material on all locator cards in the description block.

Copies of Locator Cards would be placed here.

Locate and interpret the following. Make sure you are using the correct locator card for each question. The locator cards are labeled A, B or C at the top.

Locator Card A

1. What is the order number? **WH46120**

2. What type of material is being pulled? **C1018 CD Square**

3. What is the location number for this material? **10-30-02 and 19-00-02**

4. What is the designated color code for this material? **Yellow**

Locator Card B

6. What is the quantity for this order? **24**

7. What is the theoretical weight? **323**

8. The customer has specific instructions for this order. What are they? **Length Tol plus 1/8"; Minus 0" on stainless; Bnd ea item separate; 36" max width skids; 2,000# max lifts; blocked and banded to blocks both ways for forklift unloading; No rust or reddish tint or scale; Do not mark with paint stick; Tag with GameTime part number.**

Locator Card C

9. What is the designated color code for this material? **Yellow**

10. This locator card is page 1 of 2. How many line items are on this page? **2**

11. What is the shipping weight for each line item? **151 and 83**

12. What is the material on each line of the page? **C1018 CD Round** is each line item the same size? **No. Line item #2 is 1 3/16 and line item #3 is 1 1/4.**

Instructor Notes	Activities	Materials	Time
	Set Induction Read "What went Wrong?" and discuss how this situation could be avoided.	Story: "What Went Wrong?"	5 - 10 minutes
	Guided Practice Guide learners through the problem solving steps on the board. 1) What is the problem?; 2) What are some possible solutions?; 3) What are the consequences of these solutions?; 4) What is the best solution? Have learners read the "Truck Story" and help you answer the problem solving questions.	Markerboard Kit Workbook "Truck Story"	10 - 15 minutes
	Applied Practice Have the learners read case studies and answer the questions for each one.	Workbook	20 - 25 minutes
	Closure Discuss answers as a whole group.		15 - 20 minutes

What Went Wrong?

This is a story of four people: Everybody, Somebody, Anybody and Nobody. There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did it. Somebody got angry because it was Everybody's job. Everybody thought that Somebody would do it, but Nobody asked Anybody. It ended up that the job wasn't done and Everybody blamed Somebody when actually Nobody asked Anybody.

Source Unknown

Problem Solving Steps

1. State the problem.
2. State the possible solutions.
3. Implement the most feasible solution.
4. Evaluate the effectiveness of the solution.

Truck Story

Ron, a driver for the Zig Zag Trucking Company was headed for your company with a delivery. The load was to be delivered by 9:00 a.m. and as he headed down the interstate, in the distance he could see that traffic was backed-up. Ron continued on thinking it was just your typical bad traffic day. When he came near the traffic jam he could see that traffic was being re-routed because of road construction. Ron was not familiar with this part of town. As he approached the overpass Ron realized that his rig was 13'6" and the clearance for the overpass was only 13'5".

1. How could this situation be avoided?

2. What is the problem?

3. What are some possible solutions?

4. What are the consequences of these solutions?

5. What do you think is the best solution and why?

Case Study #1

You have an order for 5 pieces of A-36 HR STD I BEAM 4 x 9.5 x 40’ 0”. You find the material in Bay 5-S03 and start pulling the material. There are only 4 pieces of material and the heat number is not on any of the pieces or recorded on the rack.

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

Case Study #2

Your order calls for 17 pieces of C1018 CD Square 1/8" 12' long. You pull the trays for the material. When you start measuring the material you find that some pieces are the correct measurement and some pieces are 1/4" instead of 1/8". You only have 10 pieces of 1/8".

1. What is the problem?

2. What are some possible solutions?

3. What are the consequences of these solutions?

4. What do you think is the best solution and why?

5. How could this problem have been avoided?

Instructor Notes	Activities	Materials	Time
	Set Induction Briefly review the topics covered in the course asking learners what the key points were for each lesson.		15 minutes
	Guided Practice Explain the purpose of the post-assessment, how scores are determined and how they will be used.		
	Applied Practice Review directions and administer the post-test.	Post-test	30 minutes
	Closure Have learners evaluate the course.	Evaluation Forms	15 minutes

242-2236

SKILLS NEEDED FOR WAREHOUSE SUPERVISOR

1. Know basic math. (Addition, subtraction, multiply and divide)
2. Read a basic blueprint.
3. Know how to use a computer terminal.
4. Have good communication skills.
5. Be able to relate and talk to employees.
6. Read and interpret safety procedures.
7. Read memos.
8. Write memos.
9. Read cutting cards.
10. Read locator cards.
11. Know different types of material.
12. Know how to locate material.
13. Be a motivator.
14. Know payroll codes.
15. Know how to write and conduct an effective performance review.
16. Know how to read information from on-line screens. (POQ, SOQ, STK, etc.)
17. Have phone skills.
18. Know equipment and the safety rules for the equipment.
19. Know what tools an employee needs for the job.
20. Know how to read and interpret instruction manuals for equipment.

February 15, 1995

SKILLS NEEDED FOR WAREHOUSE SUPERVISOR

- Read and interpret general vocational vocabulary.
- Read and locate information listed in alphabetical order or numerical order.
- Utilize reference materials and glossary lists in vocational texts, manuals and handouts.
- Identify abbreviations and symbols specific to the job.
- Read and interpret specific information from written materials, e.g., employee contracts, employee handbooks, personnel policies, business letters/memos and job manuals.
- Read and interpret specific written instructions from instructions from supervisor.
- Read and interpret written sequential directions in textbooks, manuals and handouts.
- Read and interpret employee/student progress records or performance appraisals.
- Read and interpret basic instruction and labels in operating equipment and utilizing supplies.
- Read and interpret maps, schematic diagrams, pictorial drawings, illustrations and blueprints.
- Read and interpret safety warning posters, signs, rules and procedures including: housekeeping, fire protection, emergency situations and accident prevention.
- Read and interpret general procedures for reporting accidents, damage and emergencies.
- Read and interpret instructions for the safe use of equipment, materials, and machines.
- Print or write legibly in ink.
- Utilize appropriate mechanics of standard English.
- Record date, time and other requested information on work forms, charts and graphs.
- Write common abbreviations specific to the job.

- Write short notes and/or simple memos.
- Perform computations of addition, subtraction, multiplication and division, including multiple operations, using whole numbers.
- Perform computations of addition, subtraction, multiplication, division, including multiple operations, using common or mixed fractions.
- Perform mathematical operations using equipment such as calculators or computer operated equipment.
- Perform basic measurement tasks determining length, width, height, weight, including the use of conversion tables.
- Read and interpret basic measurement and numerical readings on measurement instruments, e.g., ruler, scale, micrometer, gauge, scope; including identifying fractions in progressive sizes.
- Follow spoken sequential directions.
- Use the telephone to make and receive business calls.
- Interpret task-related communications such as following, clarifying, giving or providing feedback to oral instructions.
- Formulate and ask questions.
- Organize information into an oral report.
- Demonstrate ability to differentiate, sort and classify information.
- Indentify effective problem-solving strategies such as formulating, evaluating and choosing options.
- Solve problems and arrive at decisions as a team member in a work setting.
- Demonstrate ability to apply or transfer skills learned in one job situation to another.

DUTIES - JERRY WILKERSON

1. Time Card.
    - A. Review hours worked on time cards.
    - B. Approve time cards.
    - C. Make certain all codes are correct.

2. Conduct performance and salary reviews (wage) reviews for assigned employees.

3. Administer discipline when necessary.

4. Monthly Safety Meeting/Chain Inspection/Sling Survey
    - A. Appoint an employee to conduct safety meeting for their shift.
    - B. Make copies of the monthly safety meeting.
    - C. Attend safety meeting.

5. Make rounds to each worksite.
    - A. Visit each worksite each morning to check workloads, previous days orders, equipment and make certain all employees are present.
    - B. Visit each worksite each evening to check work assignments. Determine if adjustment is needed due to orders.

6. Monitor workloads.
    - A. Check cutting cards and locator cards.
        - 1. Check date and promise date.
        - 2. Item count.
        - 3. Piece count.
        - 4. Check type of material.
        - 5. Check for length of time needed to process orders.
    - B. Make certain each employee has plenty to do.
    - C. Make certain each employee has what he needs to do his job efficient and safe.

7. Use a CRT Terminal.
    - A. Read WIZ mail.
        - 1. Use WIZ mail to communicate with sales, specialty products, purchasing, other districts and to make work assignments.
            - A. To inform all employees what is happening in the department and shifts.

- B. Use other screens to investigate problems or status of orders.
  - 1. SFC Screen - Shop Floor Completion screen.
    - A. When an order is complete and ready to ship, this is the screen used.
  - 2. POQ Screen - Purchase Order Inquiry screen.
    - A. When purchasing inquires about material or has a problem, it is necessary for the person to use this screen to get item code.
  - 3. STK Screen - Stock Location screen.
    - A. This screen will tell someone exactly which Bay material is stocked.

8. Decision Making
   - A. If an employee has a problem, the Warehouse Supervisor will help solve the problem.
   - B. If machinery is down, the Warehouse Supervisor will make certain Maintenance aware of the problem and find out how long the machinery will be down.
   - C. Make new assignment if machinery will be down for a lengthy period of time.
   - D. If employees are off (due to illness or vacation), make certain someone is here to cover work area of that employee.
   - E. If Specialty Product or Purchasing has a problem, the Warehouse Supervisor will make certain the problem is in their area. If it is, once the problem is identified, address the problem, determine the cause and then determine what can be done to solve the problem.
   - F. Address problems with Inside Sales.
     - 1. Are orders entered with a realistic delivery time.
     - 2. Are cutting schedules trying to be broken.

9. Telephone.
   - A. Talk to sales people in districts
     - 1. Verify unique instructions on orders.
   - B. Talk to employees in corporate office.
     - 1. Address problems.

10. Job Knowledge
    - A. Know how material is handled in area of responsibility.
    - B. Know procedures for area of responsibility.
    - C. Familiar with equipment in each area of responsibility.
    - D. Know what material is in your area of responsibility and know how to find location of material.

11. Orientates New Employees
    - A. Make certain new employees have the correct tools to do the job.

12. Check on employees that are off sick.

13. Know how to relate to employees in a positive manner.

DUTIES - JOHN RUSSO

1. Time Card.
   A. Review hours worked on time cards.
   B. Approve time cards.
   C. Make certain all codes are correct.

2. Conduct performance and salary reviews (wage) reviews for assigned employees.

3. Administer discipline when necessary.

4. Monthly Safety Meeting/Chain Inspection/Sling Survey

5. Make rounds to each worksite.
   A. Meet with previous shift supervisor to get update on workload of each area.

6. Monitor workloads.
   A. Collect all cutting cards.
   B. Enter all cutting cards into a database.
   C. Distribute cutting cards to appropriate areas.
   D. Once first level of processing has occurred, forward cutting card to other areas to be worked on (if needed).

7. Use a CRT Terminal.
   A. Read WIZ mail.
      1. Use WIZ mail to communicate with sales, specialty products, purchasing, other districts and to make work assignments.
         A. To inform all employees what is happening in the department and shifts.

   B. Use other screens to investigate problems or status of orders.
      1. SFC Screen - Shop Floor Completion screen.
         A. When an order is complete and ready to ship, this is the screen used.
      2. POQ Screen - Purchase Order Inquiry screen.
         A. When purchasing inquires about material or has a problem, it is necessary for the person to use this screen to get item code.
      3. SOQ Screen - Sales Order Inquiry
         A. This screen will display a sales order.

8. Decision Making
    A. If an employee has a problem, the Warehouse Supervisor will help solve the problem.
    B. If machinery is down, the Warehouse Supervisor will make certain Maintenance aware of the problem and find out how long the machinery will be down.
    C. Make new assignment if machinery will be down for a lengthy period of time.
    D. If employees are off (due to illness or vacation), make certain someone is here to cover work area of that employee. /scheduling
    E. If Specialty Product or Purchasing has a problem, the Warehouse Supervisor will make certain the problem is in their area. If it is, once the problem is identified, address the problem, determine the cause and then determine what can be done to solve the problem.
    F. Address problems with Inside Sales.
        1. Are orders entered with a realistic delivery time.
        2. Are cutting schedules trying to be broken.

9. Telephone.
    A. Talk to sales people in districts
    B. Talk to employees in corporate office.
        1. Address problems.

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    B. Know procedures for area of responsibility.
    C. Familiar with equipment in each area of responsibility.
    D. Know what material is in your area of responsibility and know how to find location of material.

11. Orientates New Employees
    A. Make certain new employees have the correct tools to do the job.

12. Check on employees that are off sick.

13. Know how to relate to employees in a positive manner.
    A. Motivation
    B. Reward System
    C. Trial and error.

14. Expects employees to question mistakes in orders versus the drawings.

15. If a mistake is found in the order and the drawing an Internal Corrective Action Request is prepared.

16. Addresses problems with the programmers.

DUTIES - LEE THOMAS

1. Time Card.
    - A. Review hours worked on time cards.
    - B. Approve time cards.
    - C. Make certain all codes are correct.

2. Conduct performance and salary reviews (wage) reviews for assigned employees.

3. Administer discipline when necessary.

4. Monthly Safety Meeting/Chain Inspection/Sling Survey
    - A. Appoint an employee to conduct safety meeting for their shift.
    - B. Make copies of the monthly safety meeting.
    - C. Attend safety meeting.

5. Make rounds to each worksite.
    - A. Visit each worksite each morning to check workloads, previous days orders, equipment and make certain all employees are present.
    - B. Visit each worksite each evening to check work assignments. Determine if adjustment is needed due to orders.

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    - A. Check cutting cards and locator cards.
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        - 2. Item count.
        - 3. Piece count.
        - 4. Check type of material.
        - 5. Check for length of time needed to process orders.
    - B. Make certain each employee has plenty to do.
    - C. Make certain each employee has what he needs to do his job efficient and safe.

7. Use a CRT Terminal.
    - A. Read WIZ mail.
        - 1. Use WIZ mail to communicate with sales, specialty products, purchasing, other districts and to make work assignments.
            - A. To inform all employees what is happening in the department and shifts.

B. Use other screens to investigate problems or status of orders.
  1. SFC Screen - Shop Floor Completion screen.
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    A. When purchasing inquires about material or has a problem, it is necessary for the person to use this screen to get item code.
  3. STK Screen - Stock Location screen.
    A. This screen will tell someone exactly which Bay material is stocked.

8. Decision Making
  A. If an employee has a problem, the Warehouse Supervisor will help solve the problem.
  B. If machinery is down, the Warehouse Supervisor will make certain Maintenance aware of the problem and find out how long the machinery will be down.
  C. Make new assignment if machinery will be down for a lengthy period of time.
  D. If employees are off (due to illness or vacation), make certain someone is here to cover work area of that employee.
  E. If Specialty Product or Purchasing has a problem, the Warehouse Supervisor will make certain the problem is in their area. If it is, once the problem is identified, address the problem, determine the cause and then determine what can be done to solve the problem.
  F. Address problems with Inside Sales.
    1. Are orders entered with a realistic delivery time.
    2. Are cutting schedules trying to be broken.

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  A. Talk to sales people in districts
    1. Verify unique instructions on orders.
  B. Talk to employees in corporate office.
    1. Address problems.

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  A. Know how material is handled in area of responsibility.
  B. Know procedures for area of responsibility.
  C. Familiar with equipment in each area of responsibility.
  D. Know what material is in your area of responsibility and know how to find location of material.

11. Orientates New Employees
  A. Make certain new employees have the correct tools to do the job.

12. Check on employees that are off sick.

13. Know how to relate to employees in a positive manner.

MODEL FOR LESSON PLAN DEVELOPMENT

I. Set Induction

II. Pre-assessment

III. Objectives

IV. Learning Activities

   A. Pre-teach vocabulary
   B. Link old to new knowledge
   C. Direct instruction
   D. Guided practice
   E. Independent practice
   F. Other

V. Resources needed to implement activities

VI. Evaluation of achievement of objectives

   A. Formative
   B. Summative

Characteristics of Effective Workplace Literacy Instructional Programs

Program Characteristics	In place	Planned or Developing	Would like; see serious obstacles	Not wanted
1. Instruction based on student needs				
2. Instruction in job context				
3. Instruction activity oriented				
4. Instruction utilizes learner life experience				
5. Outcomes specific, measurable				
6. Content focused on application				
7. Materials from workplace				
8. Materials multiple media				
9. Competency based				
10. Mastery learning				
11. Time depends on mastery				
12. Individually paced with interaction				
13. Tests/assessments criterion-referenced				
14. Immediate feedback to student				
15. Competence certified for exit				
16. Tangible rewards for achievement				
17. Translates into improved job performance				
18. Key elements sequential				
19. Elements of good lesson plans				
a. builds motivation				
b. builds on prior related experience/ concrete to abstract				
c. builds knowledge of unfamiliar terms				
d. models thinking strategies in skill				
e. provides guided practice				
f. provides independent, applied practice				
g. brings closure, summarizes				

VOCABULARY LIST

Job context: instructional activities related to a specific job. Literacy skills required to perform job tasks are taught- not necessarily the job skills themselves.

Competency based: instruction is based on achieving mastery of one concept or skill before moving to the next.

Criterion-referenced: judged against a fixed standard of performance (as opposed to standardized, group-referenced).

Closure: a summarizing activity in a lesson.

tcCir: a lesson plan development process developed and researched by Stanley Dubelle.

Set induction: an introductory, motivational activity to bring students into the lesson.

Applied practice: practicing a newly acquired skill in the context of real-life experiences/situations.

Applied practice: practicing a newly acquired skill in the context of real-life experiences/ situations.

Guided practice: the practice of a newly developed skill under the guidance of the instructor.

Independent practice: the practice of a newly developed skill without the guidance of the instructor.

Lesson: a group of related learning activities designed to achieve related instructional objectives.

Curriculum guide: a series of related lessons combined to describe an instructional program.

Lesson plan: a teacher's description of the format, methods, media, materials, time, groupings and other aspects of a given instructional module.

PRE-ASSESSMENT
CURRICULUM DESIGN WORKSHOP

Place the letter in the block which corresponds with the best answer.

_____ 1. According to the research, which of the following is not a characteristic of good workplace literacy instruction?
  A. Outcomes are specific, measurable
  B. Instruction is in job context
  C. Lots of guided practice provided
  D. Standardized tests guide instruction
  E. Mastery learning is employed

_____ 2. -In the tcCIR method of lesson development, the "R" stands for
  A. Reality
  B. Repetition
  C. Reciprocity
  D. All of the above

_____ 3. Set induction is a term in curriculum development that refers to
  A. a mathematical grouping of objects.
  B. a motivational introductory activity.
  C. an evaluation of readiness.
  D. a closure or summary of a lesson.

_____ 4. According to the research, which of the following are characteristics of most adult learners?
  A. They are insecure, apprehensive
  B. They have a variety of experiences that are learning resources
  C. They are pragmatic
  D. All of the above
  E. None of the above

List 4 essential elements of a good curriculum design.

5. ____

6. ____

7. ____

8. ____

List 3 appropriate ways to plan and deliver instruction to meet the needs of heterogeneous learning groups.

9. ____________________

10. ____________________

11. ____________________

Please respond to the following statements.

	Yes	No
12. I have a general knowledge of the characteristics of good workplace literacy instructional programs.	____	____
13. I know and can develop the elements of a good lesson plan.	____	____
14. I know and can apply the elements of good curriculum design.	____	____
15. I know some ways to adjust instruction to meet varying achievement levels.	____	____

OBJECTIVES

Following the workshop, participants should be able to:

1. **list the developmental characteristics of adult learners.**
2. **list the characteristics of effective workplace instruction.**
3. **define the elements of a good lesson plan. (TcCir)**
4. **apply the elements of a good lesson plan in a workplace context.**
5. **define the elements of good curriculum design.**
6. **apply the elements of good curriculum design in a workplace context.**
7. **develop appropriate sequencing and linkage of lessons into a curriculum.**
8. **list instructional design alternatives to meeting varying achievement levels.**

9. **apply instructional design alternatives to meeting varying participant achievement levels in a workplace setting.**
10. **develop a lesson plan/s using the agreed upon elements.**
11. **teach the lesson/s developed.**
12. **revise the lesson/s based on feedback.**